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The Pathogenesis of Tuberculosis in Animals according to the Nieberle School*

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"This constitutes not merely an answer to a problem of scientific importance but equally permits us to draw practical conclusions concerning the individual and group prophylaxis of the disease." (Anon.)

At a previous meeting of this Society (1936)† I pointed out in vehement terms the arrant neglect in this country of authentic work relating to the pathogenesis and comparative pathology of tuberculosis. Considerable adverse criticism was received, which emphasised more than ever how bacteriological and immunological thought has dominated teaching appertaining to the disease to such an extent that the pathology has been deemed to be almost of only passing interest. In justification of these remarks, it was said that the work of Nieberle and his school in Germany on tuberculosis was apparently unknown. My aim is therefore to present a coherent essay regarding the pathogenesis of the disease in animals propounded by Nieberle, and thus vindicate the trenchant remarks made at the meeting last year.

In addition I view this occasion as a propitious one to plead for a more tolerant attitude towards the importance of, and a proper outlook on, pathology—a subject which justifiably can be termed the Cinderella of veterinary and human medicine. Boyd‡ states that "it has been the custom to regard morbid anatomy as a somewhat outworn creed, a science as dead as the material with which it deals." This is an apt reflection upon the undeniable neglect of veterinary pathology in this country, and upon the irrational attitude of workers in other fields towards a subject which is probably the keystone of modern medicine.

His next statement, that "it never has been dead except in the hands of those whose dull minds would take the very breath of life from the most vital subject" is a withering truism. As this was written in 1934 it is ironic to note that the death knell of pathology was supposedly rung in 1912 by Sir Frederic Goodhart as evident from the title of his paper —"The Passing of Morbid Anatomy"—surely, an impetuous and premature valediction. As Boyd again states, "the world of medicine did not think there was anything dead about the "Cellular Pathologie" when Virchow poured the new wine of his vital spirit into the old bottles of tradition. And the bottles are not yet full." The function of the pathologist is not merely to attach labels to the lesions which he sees, but to reconstruct the course of events from the earliest inception of disease to its fatal termination. (Boyd.) To paraphrase Handley, the picture of pathological anatomy so often given as one of a hollow and blasted trunk, leafless, and bearing but a few withered fruits in a last flicker of expiring fecundity, compared with the vigorous sapling of experimental sciences, is nothing but iniquitous disparagement. I reiterate my statement of last year that much has been done, and still can be done, when disease is rationally viewed through the eyes of the morbid anatomist, and that pathology must continue to act as the skeleton upon which all disease research must be built.

The final explanation of any disease problem must embrace that disease in its totality as it occurs in man and animals; to consider similar conditions in man and animals as separate entities is totally fallacious, and in reality means that distinctions are being made when only minor differences exist. Comparative pathology, in my opinion, thus offers one of the most hopeful prospects of the future of pathology which may resuscitate it from its apparent, but not real, state of decadence.

The crux of the problem of the pathogenesis of tuberculosis resides in the extent to which

*Presented to the Central Veterinary Society at the Conway Hall, London, on May 6th, 1937.

†Discussion on Tuberculosis in the dog. *Vet. Rec.* (1936.) Vol. 16. p. 788.

‡BOYD, W. (1934.) Text-book of Pathology. p. 6. Kimpton, London.

we can accurately answer two questions, (*a*) how does the bacillus gain entrance into the body, and (*b*), what is the subsequent fate of the organism?

It is not perhaps always understood that there are still many unsolved problems in connection with these questions. For example, to quote Boyd again, the death rate of tuberculosis is steadily falling, but many believe that this decline may be connected in some mysterious way with the discovery of the tubercle bacillus, and the institution of the sanatorium movement. Unfortunately for this hypothesis, the decline began at least 20 years before the discovery of the bacillus and about 40 years before sanatorium treatment attained any great degree of adoption. Regarding the actual mechanism of infection we are presented with a bewildering host of contradictory facts.

Before considering the disease in animals it is thus necessary to recognise certain valid and many irrefutable facts concerning the disease in man.

Rieux related that the three fundamental advances in the history of tuberculosis were made by Laennec who proclaimed its unity, Villemin who demonstrated it was due to an infective agent, and Koch who identified the tubercle bacillus. Surely, it is necessary to add to these the names of those workers such as Parrot, Kuss, Albrecht, Beitzke, Ghon, Ranke, Aschoff, Pagel, Schmorl, Rich, Opie, Cobbett and Griffith, who have contributed so much to our knowledge of the pathology and pathogenesis, as this undeniably influenced the whole outlook on the prophylaxis of the disease. The following is a composite account of a disease to which all these authorities have made outstanding contributions at various times.

The common pulmonary tuberculosis of the adult human being is not the first manifestation of the disease in the individual concerned. In nearly every person a primary infection, confined to certain sites, occurs in infancy, but in the large majority of cases the lesions heal, calcify and may even ossify, leaving a highly characteristic change which may be recognisable years afterwards. In a very small percentage of individuals the primary lesion progresses, and the child dies from its primary infection. In others, the infection may spread throughout the body, by direct extension, by the natural passages, and by haematogenous and lymphogenous paths. As Boyd says, "should the bacillus succeed in passing the Scylla and Charybdis of the lymphoid tissues it sets out in an Odyssey which may carry it far and wide into the body." My own view is that this question of spread has, to some degree, an analogy in the metastatic spread of tumours, and that the questions at issue may find a parallel solution.

In order to understand this problem of primary infection the law of Parrot and Cohnheim, that the portal of entry of the tubercle bacillus is indicated by the lesions present in the lymph nodes which drain the part, might be recalled to memory, a law which is as true to-day as when it was first enunciated. As an index of primary infection the lesion must be either the only lesion in the body or the oldest, and must at the same time be localised in a situation which is a possible portal of entry for the bacillus into the body from external sources. The primary focus can, however, be easily recognised even if there are post-primary lesions. The lymph node draining the path of primary infection always shows evidence of disease, and together with the primary infection forms the so-called primary complex of Ranke. Particularly in mucous membranes (especially in animals) and/or if the numbers of bacilli are small, the entry into an organ may be silent and only the regional lymph node is affected; this is referred to as the incomplete primary complex.

Work in the field of chronic consumption can be said to date from Behring, who stated that the disease in the adult was the end state of an infection begun in childhood. On this assumption Ranke, for example, believed that tuberculosis was comparable to syphilis, dividing the course of consumption into, (*a*) a primary infection period, (*b*) an anaphylactic stage with metastatic spread, and (*c*) a tertiary stage, of increased resistance expressed by limitation of the process to the lungs.

It is now universally recognised that a primary infection by the tubercle bacillus occurs in nearly every living person of civilised communities. The path of infection in about 80 per cent. is *via* the respiratory tract, in about 15 per cent. *via* the intestine, and the remaining 5 per cent. probably embrace such portals of entry as the nasopharynx, skin and middle ear. These figures naturally vary in different countries; for example, in Scotland the probability is that infection by the alimentary tract is higher than that given. As the genesis of the disease, subsequent to this primary infection, is comparable irrespective of the portal of entry, it will be advisable to confine our attention to the commonest type, namely, the pulmonary.

Primary pulmonary infection may occur as early as the first month after birth, usually in the first six years and less frequently after ten years. (The sequelae of a primary infection after this period will be mentioned later.) Opie, in a recent detailed study of autopsies of persons who had died from diseases other than tuberculosis, has given figures such as 43 per cent. of children up to five years, 80 to 90 per cent. of persons over 20, and nearly 100 per cent. of persons over 30 years. Subsequent to the

entry of the bacilli into the lungs, a rapidly caseating broncho-pneumonic focus results, which is small and sharply demarcated from the adjacent normal lung substance. This lesion may be located in any anatomical part of the lung, but is usually single and subpleural. This lesion is the so-called primary infection or Ghon lesion, and is always accompanied by a lesion in the regional lymph node (hilus, bifurcation or tracheo-bronchial). The transportation of the tubercle bacilli from lung to lymph node is probably conducted by means of the macrophages which abound in all tuberculous lesions. This primary pulmonary focus plus the lymph node lesion form together the primary complex. In the vast majority of cases the pulmonary lesion heals by fibrosis, followed by hyalinisation and calcification; with the passage of years this lesion may even ossify. Ossification of healed primary lesions occurs in about 40 to 50 per cent. of the calcified lesions found in people over 40 years, and this bony focus, with its myeloid components, may even in later life participate in systemic diseases affecting these elements in the body (*e.g.*, leukaemia). This permanent landmark of a solitary ossified lesion in the lungs thus constitutes a valuable index of the first infection of an individual. It is usually macroscopically demonstrable, but if not, its localisation may be revealed by X-ray examination. The associated lesion in the lymph gland may also heal and calcify and may also ossify. (This resistance to a primary infection of tubercle bacilli must be regarded as an inherited trait of the human race. The death rate is low at this period, then rapidly ascends, and maintains a high level throughout the rest of life.) Relatively rarely in children this primary infection does not heal, the initial caseous pneumonic process spreading by bronchial paths to other parts of the lung, and the child may die from its primary infection as a result of an acute tuberculous caseous pneumonia. Factors such as the virulence of the bacilli, size of infective dose and natural resistance of the host, play a key part in determining the course of the disease in every case, and at all stages.

Subsequent to the primary infection a state of allergy in the sense of Pirquet-Ranke, *i.e.*, hypersensitiveness, develops. The lesion in the lymph node may progress with regional infection of adjacent nodes, and with the formation of enlarged glands showing gross tuberculous caseous lymphadenitis—the so-called scrofula of days gone bye. So far, however, the lesions can be said to have remained localised. After the development of the allergic state, and by exacerbation of the pre-existing primary focus, the individual may enter the post-primary stage of generalisation. This is due to entrance of the bacilli into the blood stream (a tuberculous bacillaemia), and results in haematogenous spread of the infection to a few or many different organs of the body. Which organs of the body are attacked must be regarded as a fortuitous circumstance, and it is to be noted that the lungs are usually involved in this secondary spread. Almost every individual enters the post-primary stage in which lesions occur in the lungs, but in the vast majority this post-primary dissemination remains abortive and heals in the same way as the primary lesion. The post-primary lesions in the lungs are usually abortive and calcify, and are often referred to as Simon's foci. These lesions may, on the other hand, be progressive, and may then produce a special anatomical picture quite different from that found in the chronic isolated pulmonary tuberculosis. Punched-out cavities and cortico-pleural lesions are part of this process, and the type of disease may be referred to as the chronic disseminated pulmonary tuberculosis of Pagel. This type can also be distinguished serologically by the ability of the blood serum to retard the growth of tubercle bacilli *in vitro* (Pagel).

The post-primary lesions (haemic in origin) in the visceral organs may also be progressive —constituting the chronic post-primary disseminated tuberculosis. Various bones may be affected, usually in the vicinity of the metaphysis, with resultant contiguity spread from marrow to corticalis and to periosteum, and in many cases to the joints (tuberculous osteomyelitis, periostitis, and arthritis). The uterine tube in the female, the testicle, prostate, seminal vesicles in the male, one or both kidneys, the brain and the suprarenal glands are other organs which are commonly affected. In all, the subsequent course is the same, *viz.*, progressive caseation with contiguity spread of the infection and the lymph nodes draining the organs may also become infected. Gross invasion of the blood stream by the bacilli may occur with a resultant fatal acute miliary tuberculosis which may involve almost every organ in the body. Particular mention must be made of the involvement of the brain in this post-primary stage. Isolated foci may be set up in any locality of the brain which may caseate and rupture into the meningeal spaces, liberating showers of tubercle bacilli to produce the classical tuberculous meningitis so commonly seen in young people. Rich states that this is the constant process invoked in the genesis of tuberculous meningitis, and that the meninges are never affected by direct blood stream invasion. Chronic miliary tuberculosis, chronic proliferative lesions in the lymph glands, skin lesions, Boeck's sarcoid, and tuberculosis of the special sense organs are other forms of the disease which come into this category of post-primary dissemination.

We have now reached a point when the debatable problem of isolated pulmonary phthisis of the adult types can be discussed. In later life some adults, who certainly have a pre-existing primary infection focus (perhaps healed), develop progressive tuberculosis which is limited to the lungs. At one time it was thought that an individual with a primary infection could not be reinfected from without, just as a syphilitic is immune to reinfection, and that all manifestations of the disease in later life arose from an endogenous focus. Now opinion has veered to the other extreme, and adult phthisis is said to be due to a true superimposed new or exogenous reinfection; probably both endogenous and exogenous methods might be involved. Whether the reinfection is endogenous or exogenous the bacilli are arrested in the lung tissue to form again a characteristic lesion distinct in many ways from that of the primary infection, and which renders it easily recognisable at autopsy. This reinfection lesion of the lungs (Puhl's focus) is commonly situated in the apical lobe, and concurrent affection of the pulmonary lymph nodes does not occur (points in contrast to the primary complex). The percentage of individuals who are reinfected is probably about 100, but only a relatively small number (about 5 to 10 per cent. at the maximum) develop the progressive fatal disease. As in the case of the primary infection the reinfection lesion may also heal by slow fibrosis, and may calcify, but it rarely ossifies and extra-pulmonary lesions may again be only abortive. If healing does not take place, the progressive consumption of the adult man or woman develops entirely from this reinfection focus. The subsequent spread of the disease within the lungs in a progressive case is to a large extent by bronchial aspiration. The resultant anatomical picture seen in the lungs at autopsy depends, to some extent, on the manner of spread as well as the virulence of the bacilli and host resistance. When the infective dose is massive or more virulent, and/or resistance is low, breakdown of the caseous focus may occur with discharge into a bronchus, and cavity formation may result. The reinfection lesion, at first lobular in character, may ultimately assume lobar proportions in which all stages of progress of the disease can be seen. Erosion of the blood vessels or development of small aneurysms may lead to severe and even fatal haemoptysis. The overlying pleura may be thickened, and may show signs of an active pleurisy, and pneumothorax may be an additional complication. In the more chronic, slower progressive type of pulmonary disease productive inflammation predominates, and fibrosis is an outstanding feature. Finally, by coughing and aspiration, bacilli may reach the mouth and nasopharynx setting up tertiary lesions in the tonsils, pharynx and larynx, and if swallowed, may cause the common intestinal ulceration so often seen along with phthisis at autopsy: these latter lesions concomitant with chronic adult phthisis are thus all appendicular to the bronchial system. In this type of chronic pulmonary disease, the process is, therefore, truly limited to the lungs to a great degree. Acute miliary tuberculosis only occurs in the post-primary dissemination stage of the disease, and not in the isolated phthisis of the adult type, and it is necessary to emphasise that the two latter forms are mutually exclusive.

In individuals who receive a primary infection late in adult life the disease tends to pursue the course of the caseous pneumonia and acute generalisation seen in the child. Such cases were observed by Aschoff during the late war in Anatolian peasants brought up in a tubercle-free environment. Countless examples of this feature, however, could be given.

The disease in the human is thus one of primary infection, post-primary dissemination (acute miliary tuberculosis being a possible complication at this stage) and reinfection with the production of isolated pulmonary tuberculosis (*see* Fig. 1). The active tuberculosis of infants can therefore be compared to that of the experimental animal inoculated for the first time, while the isolated pulmonary tuberculosis of adults corresponds to the lesions produced by reinoculation of an animal which has already been previously immunised. From what has been said "It is evident that the ideal state will be that of an acquired immunity and not freedom from infection, for the latter is an unattainable ideal and the rarer the infection the more dangerous does it become" (Boyd). For that reason one might hope for advances along the path of preventative inoculation already indicated in the case of B C G.

I have refrained from discussing the cellular reaction which occurs in response to invasion of tissues by the tubercle baciilli, but it is perhaps necessary to mention that the classical tubercle is only characteristic for certain stages of the disease, and that there are lesions in tuberculosis which are no different from certain non-specific inflammatory reactions.

With this information at our disposal, it may now be asked to what extent the disease in animals is comparable with that in man. For an answer, attention must be directed to the work of Nieberle and his colleagues. In the time available it is impossible to give more than a synopsis of the pathogenesis and pathology, and for the same reason I shall confine my remarks to the dog, cat and bovine species.

Tuberculosis in the Dog and Cat

Tuberculosis in the dog and cat is undoubtedly a relatively rare disease; in the case of the dog, figures have been found in the literature indicating the incidence to vary

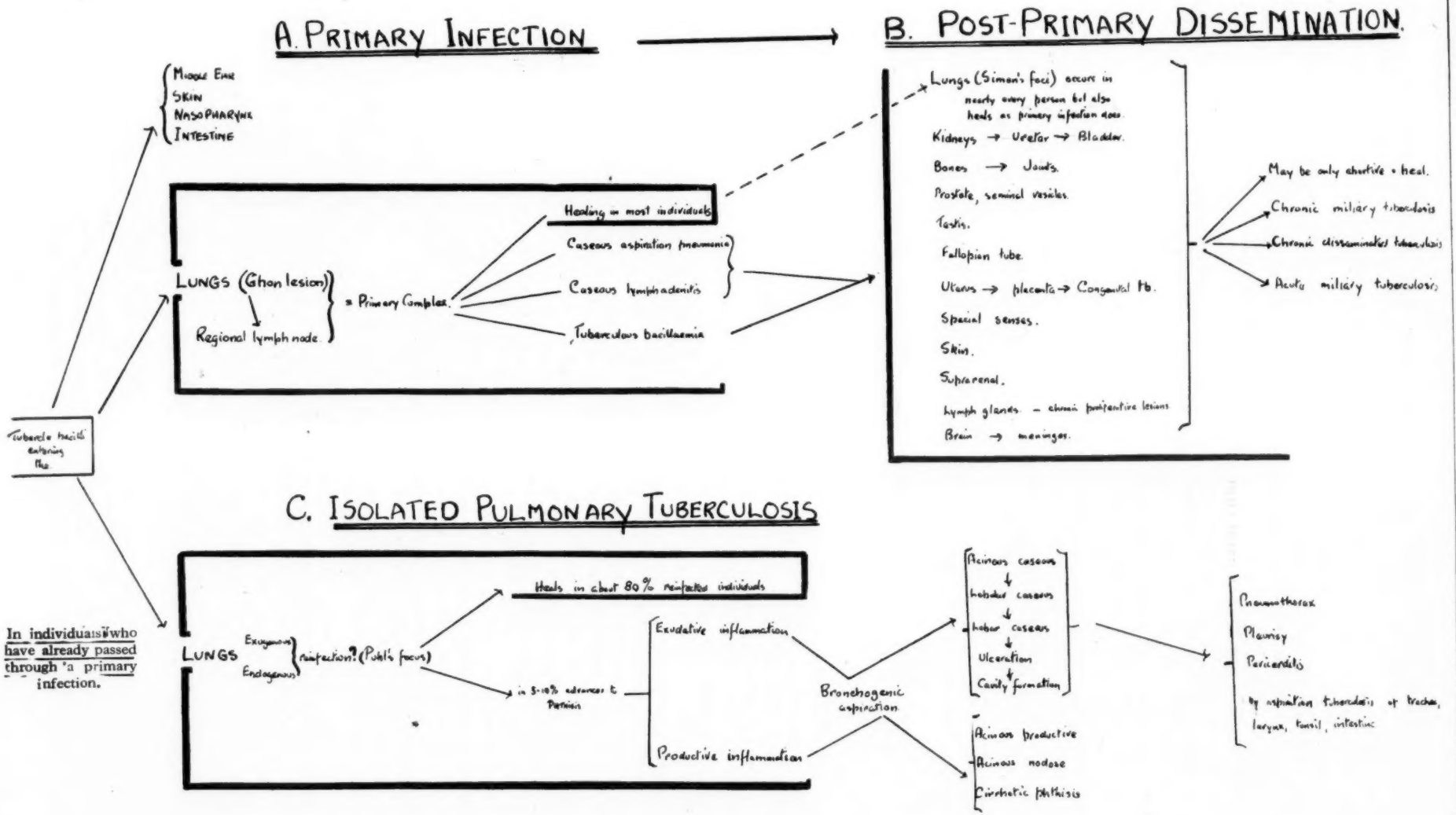

Fig. I TUBERCULOSIS IN MAN.

from 1 to 7 per cent. of all animals dying in clinics in Germany and France. There are no comparable data available regarding the incidence in Great Britain. It is obvious that there must be considerable variation in the incidence in different countries, in different localities, and in industrial areas compared with rural districts.

If the doctrine of primary infection in man is carried over into the realm of animal pathology, which it inevitably must be, my failure to find any old healed primary infections, in either the alimentary or respiratory tracts in a large series of autopsies on dogs, might indicate that this animal is but rarely infected in contrast to children. Further, it appears that when primary infection does occur, early spread and generalisation is almost the rule and not the exception as in older children. Important differences thus emerge almost at once in a consideration of the comparative pathology and genesis of the disease. (Isolated primary infection in an early stage of development can be only an accidental autopsy finding in dogs which have been killed.) Tuberculosis in dogs and cats can be said, therefore, to be comparable only with the tuberculosis of childhood in which primary infection is followed almost directly by regional spread and by dissemination of the infection to distant organs. In the large majority of cases, if the dog or cat is infected, the disease is probably progressive and fatal from its very outset, and there is thus *no* analogy of any stage of the disease with the adult phthisis of man, *i.e.*, with the chronic isolated pulmonary tuberculosis due to a reinfection. From the point of view of teaching it is thus thoroughly inaccurate to regard tuberculosis of the udder of the cow, lungs of the pig, kidneys of the horse, testicle of the dog, meninges of man, etc., as being all manifestations of an identical disease process. One might even be bold enough to state that the acute exudative inflammatory reaction seen in certain stages of the disease in man and in animals, and the chronic productive inflammatory reaction seen in other stages and in other animals, are two different manifestations of a body to infection by the tubercle bacilli.

As in man the main pathways of infection are *via* the respiratory and alimentary tract, *i.e.*, by inhalation and ingestion of the bacilli respectively. Primary infection through the skin, penis, vulva and vagina, such as has been described in the case of the calf, has not been described in the dog and cat. According to Nieberle, the commonest path of infection in both dog and cat is by inhalation, but before any final settlement can be made on this matter a much larger series of animals will have to be examined. In the small number of cases in the cat examined in Cambridge, I have failed to find any case in which infection has been by any route other than the alimentary.

The primary pulmonary lung lesion is comparable to the Ghon lesion in the human. This takes the form of a caseous pneumonic focus usually situated in the dorsal part of the main lobe, and which is subpleural in position. Transport of the bacilli to the regional lymph nodes results in a caseous lymphadenitis, and the complex is thus complete. It has been suggested that in animals the bacilli may pass silently through the primary portal of entry into the body, *e.g.*, the lung, to cause a lesion only in the regional lymph nodes.

The lesion in the lungs and lymph nodes is distinctive in its cellular reaction, and corresponds in no way to what is often regarded as the classical tuberculous reaction. (In the past this fact, no doubt, has been responsible in many cases for mistakes in diagnosis.) The classical tubercle is conspicuous by its absence, and the process is one of a diffuse slow coagulative necrosis. The predominating cell concerned in the cellular reaction is the large macrophage; the so-called typical tuberculous giant cell does not occur, and necrotic areas merge with normal tissue often without any definite demarcation zone of inflammatory cells. The absence of calcification in tuberculous lesions of both dogs and cats is an old observation, and is peculiar in view of the tendency of the dog tissues in other conditions to calcify and even ossify (for example, in chronic nephritis and mammary tumours). The regional lymph nodes (hilus and bifurcation) may become enormously enlarged, matted together and to the adjacent lung tissue, and may be a conspicuous feature immediately the thorax is opened. This massive tumour-like mass is probably the reason for the statement that such lesions may be mistaken for tumours (*e.g.*, lymphosarcoma), but after histological examination there can be no confusion. The lesion in the lymph node is similar to that seen in the lung, *i.e.*, confluent foci of necrosis often not sharply delimited by cellular reaction from normal lymphoid tissue. Macrophages may be abundant, but giant cells and calcification are never present, and an early formation of highly vascularised fibrous tissue may be seen at the margins of the lesion. The inflammatory process is thus essentially productive in character.

Nieberle has observed healing of the primary lesion by fibrosis and hyalinisation, but this must be regarded as a relatively rare event and the natural sequelae to any primary lung focus may be as follows. Spread of the disease in and from the lungs is by (*a*) direct contiguity, (*b*) the blood stream, (*c*) the lymph stream and (*d*) bronchial paths.

Through breakdown of the lung focus or by

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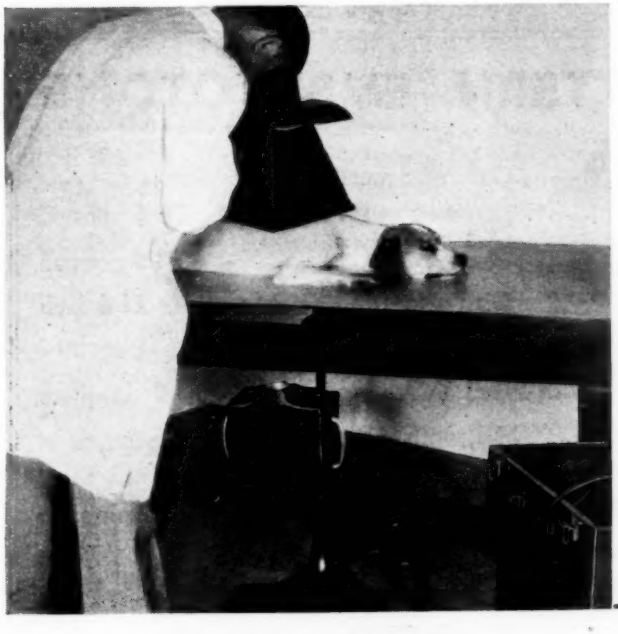

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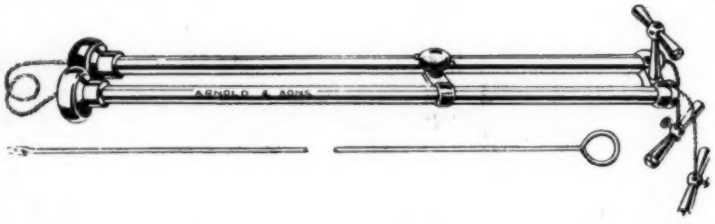

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direct extension, showers of bacilli may be liberated into the pleural cavity to produce the diffuse or nodular type of sero-fibrinous pleurisy. In these cases the pleura may be enormously thickened and adherent to the lungs, and there may be an abundant serous or sanguineous pleuritic transudate. By the same route the diaphragm, pericardium and arch of the aorta may be involved. (In the case of the latter, gradual extension of the process through the walls of this vessel and the liberation of bacilli into the blood stream to cause acute miliary tuberculosis is not a remote impossibility.) This extensive type of coelomic disease in dogs has been an oft-repeated observation, and is perhaps one of the commonest types of spread which occurs from a lung focus. Whether this pleural disease, co-existent with pulmonary lesions, can occur by other paths than direct contiguity is problematical but spread *via* haematogenous and retrograde lymphatic channels has been suggested.

Spread of the infection within the lungs may occur along the bronchial paths by aspiration and along the peribronchial lymphatics. Tuberculous bronchitis, bronchopneumonia and peribronchitis are, therefore, common. Cavity formation has been described, but this is probably a manifestation of simple bronchiectasis , and not due to a true tissue breakdown such as is seen in the phthisis of the human adult. Sooner or later the initial lobular nature of the lesion assumes lobar proportions. At any stage in the process the bacilli may enter the systemic circulation to set up "metastatic" lesions in such organs as the kidneys, liver, spleen, testis, prostate and bones, etc. Dependent, no doubt, upon the size of the infective dose entering the circulation, the lesions in these organs may take the form of an acute miliary tuberculosis but more commonly isolated foci are set up in the organs mentioned (submiliary foci). In these isolated haematogenous outspreads, and in the miliary type, the structure of the classical tubercle is again missing.

Particular mention must be made of possible bone complications. A diffuse hyperplastic osteoperiosteitis ("Akropachie") has long been known to occur in dogs, but while some authorities contend that it is essentially tuberculous, others have stated that it is analogous to Paget's disease of bone in man. At present all that may be said is, that it is commonly observed in cases of tuberculosis in dogs, but that its tuberculous nature remains to be proved.

As in the other animals primary infection *via* the alimentary tract occurs in two main sites, (*a*) the pharyngeal region, which is relatively rare and need not be discussed, and (*b*) the ileocaecal region of the intestine. In the latter, infection in the majority of cases is in the nature of an incomplete complex, *i.e.*, lesions are present only in the lymph nodes draining the intestine and not in the intestinal mucosa. Subsequent spread from this nidus is comparable to the spread following a primary pulmonary infection. Breakdown in the node lesion may lead to generalised tuberculous peritonitis, while lymphatic invasion will result in the bacilli reaching the thoracic duct to be carried to the lungs. From the pulmonary foci which are set up, invasion of the systemic circulation must again inevitably lead to miliary and submiliary lesions in the viscera.

A more detailed publication concerning the pathogenesis of the disease in cats will be made at a later date, and in view of this many points of importance have been omitted, but the occurrence of tuberculosis of the uterus in the cat as part of the dissemination process may be mentioned, although congenital tuberculosis of either dog or cat has not so far been reported.

The pathogenesis of the disease in dogs and cats is shown in schematic form in fig. 2. (*See* page 790.)

Tuberculosis in Cattle

It will be impossible to do more than touch upon the surface of this subject; I intend, therefore, to deal only with certain aspects which might give some indication of the problems involved.

As in the case of man, dog and the cat just cited, the genesis of the disease in the bovine is founded on an understanding of the site, nature, and fate of the primary infection focus. While in man and the dog only a small percentage of primary infections occur in extrapulmonary tissues, in the case of the bovine it seems to be the unanimous opinion that alimentary infection is the more prevalent. In addition in the bovine there is the genesis of the not uncommon congenital tuberculosis to be considered.

Primary infection of the alimentary tract in the bovine species appears to be mostly in the nature of the incomplete complex, *i.e.*, the bacilli appear to penetrate the intestinal mucosa without leaving any trace and to affect only the regional lymph nodes. It is impossible to say in what percentage of cases this is true because the search for a lesion in the mucosa, which might be microscopic in its dimensions, must be a formidable task, and many intestinal lesions must be overlooked. On the other hand, primary infection of the respiratory tract in the majority of cases is comparable to that in man, *i.e.*, a pulmonary focus (Ghon lesion) plus a lesion in the regional lymph nodes

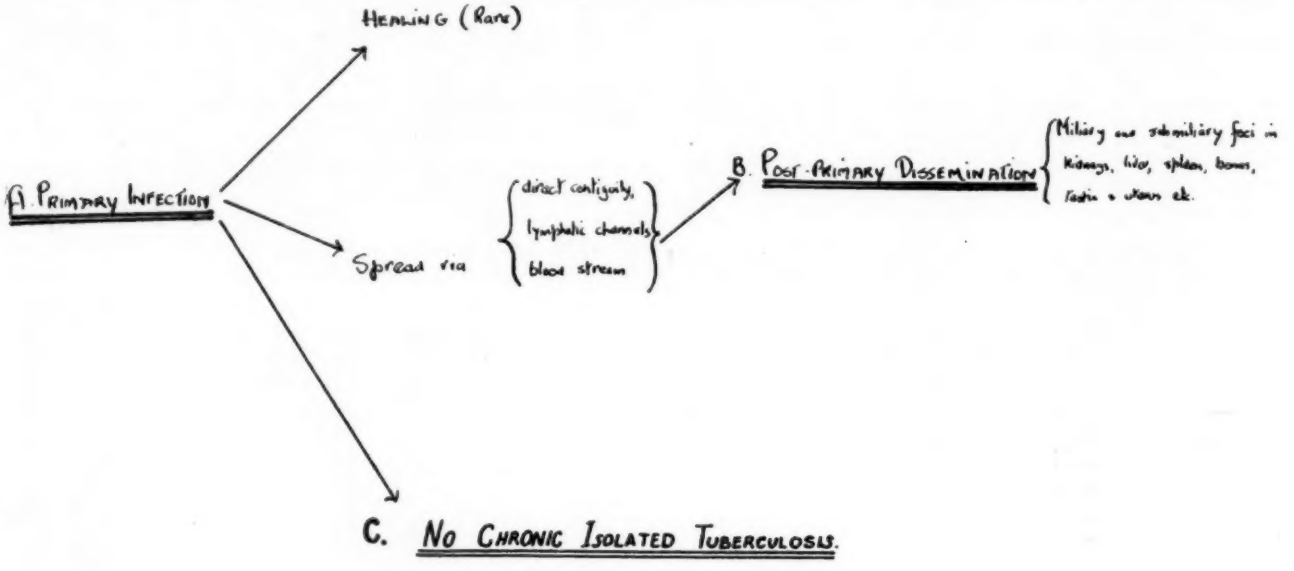

Fig 2. TUBERCULOSIS IN Dogs and CATS.

forming a complete complex. It is pertinent to note that such observations could only have been made in the case of young animals, not suspected of being tuberculous, which have been slaughtered and in which primary lesions have been found in an uncomplicated state. Primary infection occurring in the young bovine by other routes than those mentioned have been described—for example, by way of the penis, vulva and vagina—but these will not be discussed.

In the cow the lesions which follow the entrance of the bacillus are similar irrespective of their portal of entry. These changes are also closely allied to the type of cellular reaction commonly recognised as being typically tuberculous. Tubercle formation is here seen in its classic form of central caseation bordered by abundant epithelioid cells, and with numerous lymphocytes at the periphery of the nodule; multinucleated giant cells are always present, and as in man calcification occurs relatively early and is often an outstanding feature. The caseation in the lymph nodes may, however, not take the form of the homogeneous type seen in man, but often may form multicentric foci which may partly coalesce and the gland has a coarse streaky appearance. Whether or not healing of the primary infection takes place in any great number of animals is unknown but ossification of the primary infection such as is seen in man is apparently not observed.

In contrast to the case of the dog and cat, but in some degree analogous with man, tuberculous in the bovine can be divided into, (1) primary infection, (2) post-primary dissemination and (3) late generalisation in which chronic tuberculosis of the lungs and other organs is an outstanding feature,

In calves, post-primary dissemination follows directly after the primary infection and irrespective of the location of the primary focus the disease spreads by four paths, (*a*) by direct contiguity, (*b*) by intracanalicular channels, (*c*) by the lymphatic vessels and (*d*) by the blood stream. The first mode needs no explanation and the second is best exemplified by the bronchial spread which occurs within the lungs. If the primary focus is situated in the lungs invasion of the systemic circulation will result in isolated foci in some or many of the visceral organs. In the case of a primary infection of the alimentary tract (where lesions may only be present in the regional lymph nodes), the bacilli will reach the systemic circulation with the same end-result by way of the thoracic duct and lungs. Lympho-haematogenous paths thus represent the main channels by which infection is spread from one part of the body to another. The organs most frequently found to be affected in this early generalisation are given by Nieberle as spleen, peripheral lymph nodes, lungs, kidneys, serous membranes and liver.

The lesions of this early post-primary dissemination can be divided into protracted progressive generalisation, large nodular generalised tuberculosis and the so-called acute miliary type; these will not be discussed any further. All "metastatic" lesions in the visceral organs are inevitably followed by infection of the lymph nodes draining the organs concerned; for example, lesions in the testis will be followed by infection of the iliac and para-aortal lymph nodes, and liver lesions by corresponding infection in the portal nodes, etc. It is almost certain that a

haemic origin is responsible for the widespread infection of the peripheral lymph nodes so often seen, and of those visceral nodes which appear to be infected without a corresponding lesion in the organ which is drained by that node.

So far the disease in the young bovine resembles closely that in the human being—the mode of infection, the spread of the disease and the fact that primary infection may be followed directly by early dissemination are all parallel features. In the disease affecting the adult bovine animal there is, however, a further feature to be considered, namely, the stage of late generalisation in which there is some resemblance to the chronic isolated pulmonary tuberculosis of the human adult. In the case of the cow chronic disease of the late generalisation period affects not only the lungs but also the udder, and Nieberle even states that certain chronic forms affecting the uterus, kidneys, and bones, may also be included in this category.

According to this authority, proof of the analogy of the chronic "organ" tuberculosis of cows with the isolated pulmonary phthisis of man resides in three pathological characteristics, (*a*) the predominating intracanalicular manner of spread, *e.g.*, bronchial in the lungs and *via* the ducts in the case of the udder, (*b*) the absence or minor degree of calcification which occurs in the lesions, and (*c*) the absence of lesions in the regional lymph nodes of the organ concerned. It must again be stressed, if such chronic organ tuberculosis of the late generalisation stage in the cow is to be compared with the chronic isolated pulmonary phthisis of the adult human, then such forms must be limited to one organ (*e.g.*, lungs, udder, etc.), or at the most only abortive lesions must be present elsewhere in the body. [The term chronic "organ" tuberculosis used by some German authors is rather confusing (in this case by Nieberle for forms occurring in the late generalisation period) as Aschoff originally used the term to denote the spread of the disease in the post-primary period.] The percentage of cases in the cow in which this chronic form of the disease is truly isolated remains to be discovered.

It is impossible to deal with chronic "organ" tuberculosis in its entirety; therefore, I intend to confine my remarks to one organ, namely, the udder.

According to Nieberle, it is possible to subdivide tuberculosis of the udder into three distinct anatomical forms, all of significance in any consideration of the pathogenesis of the disease, (1) miliary tuberculosis, (2) caseous tuberculous mastitis and (3) chronic udder tuberculosis due to a reinfection—the so-called infiltrating lobular tuberculosis.

(1) *Miliary Tuberculosis.*—One quarter, one part of a quarter, or even the whole organ may be riddled irregularly with small typical tubercles, between which normal udder tissue is clearly discernible. This miliary process is no different from that which will have affected many other organs of the body, and which is simply a complication of post-primary dissemination. Histologically, the lesions take the form of the classic tubercle, caseation and calcification being the rule. The tubercles are nearly always intralobular in position, and are obviously the result of a heavy bacillaemic invasion of the blood from some extra-mammary tissue with haemic spread to the udder. The regional lymph nodes are always infected.

(2) *Caseous Tuberculous Mastitis.*—This form of the disease may affect large areas of the udder to the extent of a whole quarter. The margins of the lesion are irregular, but delimited from the normal udder tissue by a hyperaemic zone, and to some extent the lesion rather resembles the appearance of an infarct. The caseation is not homogeneous but in the form of multicentric streaks and patches; the supramammary lymph nodes are nearly always macroscopically enlarged, and may show a similar appearance to that of the udder. Microscopically the lesion is one of a diffuse coagulative necrosis, the margins of which are demarcated by an acute inflammatory reaction.

(3) *Chronic "Isolated" Udder Tuberculosis—Infiltrating Lobular Tuberculosis of Nieberle.*—This type, according to Nieberle, is the commonest form of disease in the adult cow, representing about 75 per cent. of all udder tuberculosis. The anatomical picture is one which might not be regarded as typically tuberculous in nature, and the supramammary lymph nodes are seldom affected. Macroscopically the udder shows dense nodules of greyish red granular tissue, often occupying the deeper parts of the gland, which stand in contrast to the lobulated fleshy appearance of adjacent normal udder tissue. Caseation in these foci may not be marked, and thickened septa are outstanding landmarks. Histologically, the picture is not that of the classical tuberculous reaction; the normal architecture of the udder lobule may be obliterated by a dense cellular infiltration of the large macrophagic type of cell, and the ducts are filled by plugs of these cells and detritus; the walls of the ducts may be markedly fibrosed. The supramammary lymph nodes may show no changes or only abortive tubercle formation. This is again an essentially productive type of inflammation.

As mentioned, the miliary type is part of a miliary process affecting the body in general due to haemic transport of infection. The caseous mastitis is viewed by Nieberle as being the reaction of the udder to an infection, in a body in which allergy has been developed to

a high degree. The chronic lobular infiltrating type is regarded by him as analogous to the isolated pulmonary phthisis of the human adult due to a reinfection, and occurring in a body in which resistance is relatively high. The anatomical character of the lesions, the proliferative type of inflammation, the minor degree of calcification, the essentially intracanalicular manner of spread within the udder and the freedom of the regional lymph nodes from infection are points directly comparable with chronic pulmonary tuberculosis of man. It must be emphasised, however, that unless the udder disease is indeed isolated, *i.e.*, if only abortive lesions are present elsewhere in the body, this comparison cannot be made. Finally, it may be said that udder tuberculosis develops entirely as a result of haematogenous spread whether it occurs in the stage of early dissemination or of late generalisation, a primary ascending infection *via* the teat and lactiferous ducts being a highly improbable event. The possible infection of the udder by way of retrograde lymphatic channels is similarly an untenable proposition.

If this chronic tuberculosis of the late generalisation period occurring in extra-pulmonary organs in the cow is indeed identical with the isolated pulmonary phthisis of man, it is obvious that it must be due to an endogenous reinfection; only in the case of the lungs of the adult cow can an exogenous reinfection be possible.

Congenital Tuberculosis in Calves.—All congenital cases arise as a result of a placental tuberculosis of the mothers; *i.e.*, the foetal membranes act as the ante-natal source of primary infection of the calf. There are thus two possible modes of entrance of tubercle bacilli into the foetus, (*a*) by aspiration into the lungs of infected amniotic fluid and (*b*) by passage of the bacilli along the umbilical vein into the foetal circulation. The former need not be considered apart from mentioning that, in the rare event of an isolated primary pulmonary focus being seen in a new-born calf or in one only a few days old, such an origin can be the only one. In the second event, the bacilli reach the liver and from thence pass to the portal lymph node. Lesions may be present in both the liver and portal lymph node or in the latter alone, and the condition is comparable in every way to the complete or incomplete primary complex of the lungs or intestine caused by post-natal infection. Nieberle stated formerly that in calves over 14 days old, in which such isolated portal gland lesions are seen, it is impossible to decide whether infection has been truly congenital or has been a case of very early post-natal primary infection *via* the duodenum. Latterly he has produced evidence to show that nearly every case of isolated portal lymph node tuberculosis (with or without liver lesions) is congenital in origin.

This concludes a relatively brief account of the comparative pathogenesis of tuberculosis. Owing to the immensity of the subject, the paper of necessity has been abbreviated, and I have tried as far as possible to exclude much discussion of detailed pathology; cellular reaction and the histology of the lesions thus have been almost omitted. I think, how-

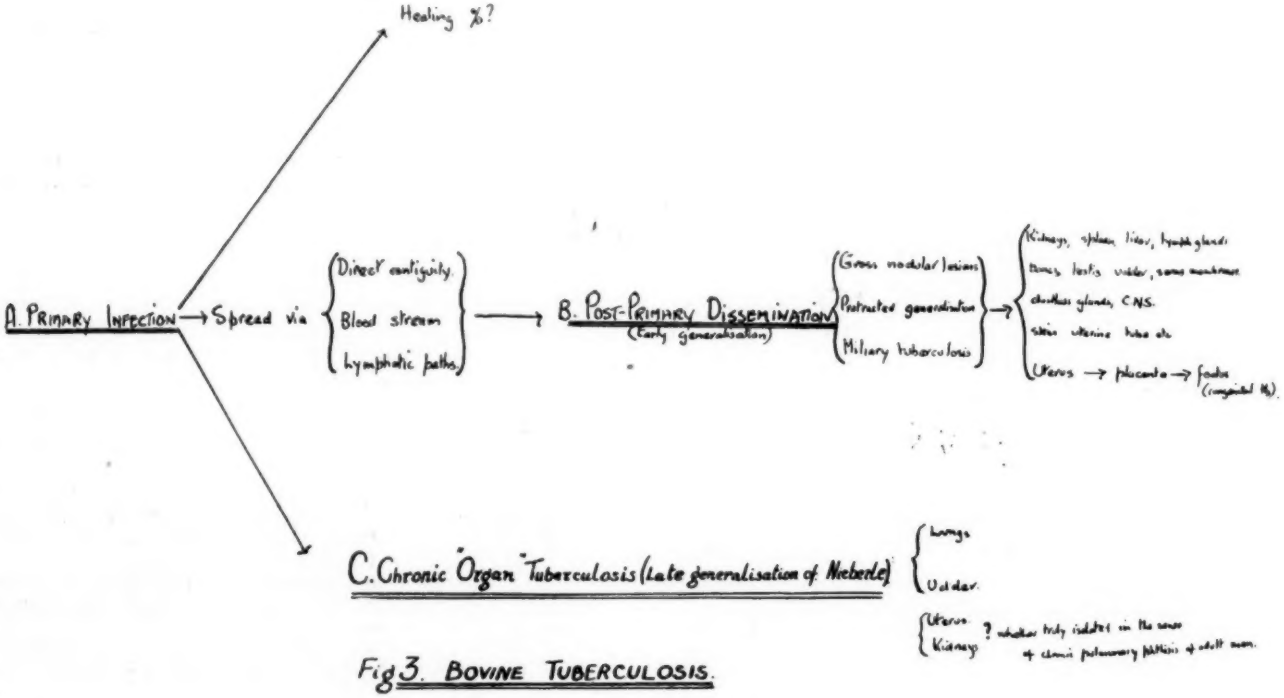

Fig 3. Bovine Tuberculosis.

ever, sufficient facts have been presented to show what has been accomplished in studies of the comparative pathology of tuberculosis, mainly through the arduous labours of Professor Nieberle and his pupils. Many problems still remain to be solved, and with the vast amount of material at the disposal of the animal pathologist much could be done by anyone willing to devote the time necessary for minute and careful *post-mortem* work. In the future more reliance must be placed on detailed observation and data derived by pathological studies of animal diseases alone, and not as in the past on simply transferring facts concerning diseases of man to parallel conditions in animals without any attempt at serious and critical analyses.

As far as tuberculosis concerns the animal pathologist, it must not be considered sufficient simply to give a positive or negative diagnosis at autopsy; the origin of the infection, mode of dissemination and reaction of the host are of equal paramount importance. Only in this way will any complete understanding be obtained of the variation in the pathology of the disease in different animals, and in the same animals when caused by the different types of bacilli.

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Discussion

The President (Professor J. G. Wright) observed that they had been privileged to listen to a most instructive and scientific paper by Dr. Innes. He was going to call upon Mr. Steward to say a few words by way of opening the discussion.

Mr. J. S. Steward said that, at the outset, he must express his regret that it would be quite impossible for him to do anything like justice to the admirable paper they had just heard, if only for the reason that he had no idea that he was going to be called on.

Dr. Innes' paper was of great interest to all of them, but more particularly perhaps, to those of them who were engaged, as he (the speaker) was, in public health work. Under the circumstances to which he had referred, however, he had only a few observations to make—largely, of course, on bovine tuberculosis.

He had brought with him two specimens. One of these illustrated what the older veterinary pathologists said did not occur very often in cattle, namely, cavity formation in the lungs. He, however, had found these cavities in 15 per cent. of cases killed under the Tuberculosis Order. The other specimen was a case of tuberculosis of the vulva—one of the truly unusual lesions, he thought.

The lesions in the cow from which the second specimen was taken were tubercle of the vulva, early lesions in the iliac glands and pin-point lesions in one of the bronchial glands. The vulvar tubercle was probably not a reinfection from the lungs but a separate primary infection of the vulva following injuries at a previous parturition.

He had made a classification of the route of infection in the cows which he had examined *post-mortem* but had only connected the records of the last 60 cases killed this year. His figures would suggest that in 40 per cent. of cases the infection was by the intestine, in 40 per cent. by the respiratory tract, in 10 per cent. congenital and the remaining 10 per cent. "various." He was taking the relative age of the lesions and their distribution as indicative of the method of spread. In one of the last group there was a gross lesion in the popliteal gland and a slight infection of the lungs with tiny lesions in one or two other glands.

He disagreed with Dr. Innes' statement that the ideal state was an acquired immunity. That might be so where reasons of sentiment prevented the slaughter of reactors but they could with reasonable certainty eradicate the disease from cattle when they could afford it. He understood that there were people who disagreed with him on that point, but he still maintained that opinion.

He wanted to ask Dr. Innes one or two questions: he believed that Hunting, in his investigations on glanders showed that infection was generally by the alimentary tract but that the majority of the lesions were found in the chest. Could that occur in tuberculosis in the ox: namely, could one get infection by the alimentary tract with dominating localised lesions in the lungs other than the miliary type of generalisation?

From the *post-mortem* examinations he had made he was of the opinion that infection of the udder was almost invariably haematogenous and he would like to ask the essayist if he thought that the supramammary glands were infected in any other way than by the blood stream where there was no evidence of infection of the udder.

The analysis of figures from *post-mortem* examinations could be exceedingly valuable, and in his series of such examinations for this year he had been struck by the remarkable propor-

Tuberculosis of the Vulva

tion of miliary tuberculosis of the lungs (40 per cent.) with primary infection of either a mesenteric or mediastinal gland of the lungs themselves. Many of these cases of miliary tuberculosis were in a very early state, the cows being in quite good physical condition but being killed on account of having tuberculosis of the udder (or "giving tuberculous milk") as detected either by microscopic or biological examination and herd sampling. He was inclined to think this unusual proportion of cases of miliary tuberculosis might be explained by the bad weather of the previous summer and the very poor nature of last year's hay crop.

In 30 per cent. of cases the kidneys had contained lesions and in 25 per cent. there was tubercle of the uterus—in some cases detected during life by microscopic examination—the organisms being usually exceedingly abundant.

He wanted to know from Dr. Innes what he thought to be the usual routes of infection of the liver and if he considered that where the lesions were oldest in the liver the method of spread was congenital.

Sometimes one found lesions about the size of a halfpenny in the lungs and quite discrete: did the essayist consider these were congenital lesions? He (Mr. Steward) did.

Where there was gross tuberculosis of the glands one might get very little tuberculosis elsewhere: did he think that a stronger immunity was set up by glandular than organ tuberculosis? In such cases (of gross glandular tubercle) one frequently had great difficulty in obtaining evidence of infection of the lungs during life and at *post-mortem* examination the lesions might be found to be almost confined to the glands. Furthermore where the glands were discharging pus it might be exceedingly difficult to demonstrate the presence of tubercle bacilli even though there was gross infection of the gland. In some cases it was only possible by the use of cultural methods or the biological test.

He must apologise for those very scanty remarks but he had not expected to be called on to open the discussion.

Mr. E. G. White said that, with reference to Dr. Innes' remarks on udder tuberculosis in the cow, he had recently received in the course of routine examination of specimens from veterinary surgeons two portions of udder. In each case the veterinary surgeon stated that the supramammary gland was normal and expressed the conviction that the condition was not tuberculosis. In both specimens smears showed large numbers of acid-fast organisms and histological examination revealed typical lobular infiltrating tuberculosis. This illustrated the difficulty of diagnosing this type of udder tuberculosis.

If one was to accept the story of tuberculosis as so admirably outlined by Dr. Innes it was clear that primary tuberculosis could arise only in organs to which the tubercle bacillus could get direct access; primary tuberculosis of such organs as the adrenal was clearly impossible.

With regard to Dr. Innes' remarks on the condition sometimes seen in dogs with tuberculosis and constituting a diffuse ossifying periostitis, this also occurred in certain diseases other than tuberculosis in domestic animals, in wild animals in captivity and in man.

Continuing, Mr. White said that it appeared to him that more use might be made of the valuable material available at slaughterhouses for studying pathology, and some European countries, *e.g.*, Germany, were in this way obtaining much useful information on such important problems as bovine tuberculosis. The danger of tuberculous meat was, of course, greater in countries where raw meat formed an article of diet. It had been firmly established that the character and not the extent of tuberculous changes should be the deciding factor in the inspection of meat. In cases in which there existed a rapid caseating lesion of such an organ as the udder, it had been found that tubercle bacilli were demonstrable in the meat and the most recently published figures gave positive results in 69 out of 82 cases. Similar results were obtained in caseating tuberculosis of the lung, uterus, ovary, etc. In histological sections of such caseating lesions, appropriately stained, it was often possible to see tubercle bacilli within the lumen of vessels and this gave some idea of the extent of the possible bacillaemia.

Dr. Tom Hare observed that there was no doubt that Dr. Innes was amongst the first string of morbid anatomists because he fulfilled the criterion of this distinction, namely, that whatever he talked about did not matter so long as he spoke it with passion. (Laughter.) There was no advantage in his renewing the observations which he had made on the last occasion that Dr. Innes addressed them. He was prompted to make one suggestion on tuberculosis in birds. There were forms of tuberculosis in the wild passerines and parrots on the origin of which it was very difficult indeed to get information. He referred to the tuberculosis that was found in one or more isolated caseating areas beneath the skin and confined to the subcutaneous tissues, particularly of the head. It was difficult to visualise a lymphatic spread in such cases: he supposed Dr. Innes was going to say that the spread of tuberculosis in the bird was invariably haematogenous.

Dr. Innes: "That is outside my scope."

There was still another question: was the essayist able to explain those typhoidal types of avian tuberculosis which resulted from inoculation through the skin of the feet of negroes who worked on poultry farms in America? He thought Dr. Innes would find quite a number of those cases in American literature where the tuberculosis was an acute bacillaemia, clinically almost indistinguishable from typhoid.

Dr. Hare said that it was so encouraging to see some of our younger generation specialising in morbid anatomy; definite progress was being made by Dr. Innes, White and others of their colleagues in veterinary pathology, and he was confident that Dr. Innes would be able in the course of time to look back with satisfaction upon his own work and that of his colleagues.

Mr. H. E. Bywater (Hon. Secretary) said that in rising to speak on such a subject he was reminded of the proverb "Fools rush in where angels fear to tread"; at all events, he was very conscious of the fact that his contribution to the discussion would be one rather of quantity than of quality. He was also very conscious of not having had the opportunities afforded to Dr. Innes and Mr. White of becoming conversant with the more academic side of the subject under discussion. He had, nevertheless, had some

experience of tuberculosis, though that had been very largely confined to the slaughterhouse. The animals he had examined had been apparently healthy and fetched good prices, being bought by the butchers, but he had found after slaughter that a large percentage were affected with tuberculosis.

His experience, in one respect at least, did not quite coincide with that of Mr. Steward. True he had seen cavitation of the lungs, but he had been surprised to hear Mr. Steward say that 15 per cent. of tuberculosis of the lungs in bovines were affected in that way: in his experience the percentage was much lower.

Of 10,828 cows which he had examined he had found that no less than 59·5 per cent. had tuberculosis in some form or other. These were mostly old cows. With regard to heifers the figure was only 11·8 per cent. though he had only had 1,312 of these. The figures for bullocks were 7·3 per cent. of 5,000 animals. Cows were undoubtedly much more affected than any other type of animal.

He had examined no less than 36,333 pigs and he had only found 5 per cent. of them infected. They could not take much notice of that percentage in pigs, however, because the position was that if one examined one batch of pigs one might find about 90 per cent. of them affected with tuberculosis in some form or other, while in another batch none would be affected at all: it all depended on the area from which the animals came and the method of feeding, etc.

He had done very little microscopic work but he had met with a certain number of cases of suspected tuberculosis which proved on examination to be actinomycosis, but, of course, those cases were comparatively rare, although not so rare as he had formally thought.

They might be interested to know that with regard to pigs he was satisfied that there was something to be said for the existence of a primary septicaemic condition followed later by the haematogenous picture, with the final miliary tuberculosis of the lungs. In pigs he had found that one not infrequently got tuberculosis of the substance of the spleen, liver and mesenteric glands only. That was very rare indeed in cattle, in his experience. He wondered whether this was really a portal septicaemia as opposed to a generalised septicaemia. The most common site of tuberculosis in cows was the lymphatic glands associated with the lungs. Out of 6,500 cows affected, no less than 6,000 had tuberculosis of the bronchial lymphatic glands only, the posterior mediastinal were the next most commonly affected and then the anterior mediastinal glands.

He was of opinion that in cows infection was mainly a respiratory infection, and when one considered the conditions of housing one would expect that. With regard to the younger animals, the infection was about half respiratory and half digestive organs. In the pig infection was always a primary alimentary infection. In 2,000 pigs he found that 466 were affected in the mesenteric lyphatic glands, and 1,000 in the sub-maxillary lymphatic glands, as compared with 247 in the bronchial glands.

Mr. Bywater now outlined his method of examining carcases and proceeded by saying that another point was that in the pig calcification was quite common, whereas in cattle he had never yet seen a case of complete calcification of the lesions of tuberculosis.

Mr. White, having been accorded permission to speak again, said that tuberculosis in calves commonly took the form of lesions in the liver and portal lymph glands. Two explanations of this were possible—congenital infection arising in utero *via* the umbilical vein and alimentary post-natal infection which had failed to produce macroscopic lesions in the intestine. Recently, calcified tubercles had been noted in the livers of calves under four weeks old and since it was considered that the development of macroscopically recognisable calcification in calves required at least 50 days, the assumption that infection was congenital appeared to be justified. By tracing the cow in each case, support for this view was obtained since tuberculous metritis was found to be present. As long ago as 1919 compulsory notification of tuberculous calves was adopted in Saxony and similar regulations had recently been adopted in other parts of Germany. In each case, the cow was traced and examined for tuberculosis, particularly tuberculous metritis. Here was an example of the service rendered by pathological anatomy, a subject which Dr. Innes had that evening so ably defended.

Mr. W. P. Blount, when invited to contribute to the discussion, observed that the subject was so immense that he was sure that many of them would require a little time to consider the various aspects of tuberculosis brought up by Dr. Innes that evening. He might say, however, that he rather disagreed with the essayist when he assumed that all the attention should be devoted to the morbid histology of the subject. He would prefer that it be directed to the physiology in the first instance, because there was little doubt the story as told by Dr. Innes could not necessarily be applied to birds, where physiology differed so much from that of mammals and in particular, the study of the sub-epithelial lymphatic system, the concentration of hydrogen ions in the digestive tract, and the absence in the polymorphonuclear leucocytes of a proteolytic ferment (which ensured that pus in the domestic fowl was solid). Nevertheless, Dr. Innes' paper was highly interesting and he was to be heartily congratulated upon it.

Dr. McCunn said that he felt that he must join in the discussion, but not on the academic side, because the older he got, and the more he became surrounded by youthful enthusiasts, the more ignorant he became academically. He felt that he must support Dr. Innes if only to put a check on our young and enthusiastic bureaucrats and their proposed raids on the public purse. There was no doubt that, if they could kill off every tuberculous animal, human and otherwise, burn all the houses, disinfect all the fields and everything appertaining thereto, they could eradicate tuberculosis very quickly in this country. That was an impossible solution. Tuberculosis was a specific disease, and like all other specific diseases ran a certain course. Taking as an analogy measles or scarlet fever, there were times when the incidence was very great; there were times when it was very low; there were times when virulence was very high and when virulence was very low. They had been told that the death rate from tuberculosis in, say, 1850, was much greater than it was at the present time, but they must not be too optimistic and think that reduction was only due to efforts on their part, either sanitary or veterinary or medical. If a chart was made of the death rate from tuberculosis they would find that it went in the same way as in the case of every specific disease. Some years ago, his old chief, Dr. Bulloch, informed him that he had got out a chart relating to tuberculosis. He believed that somewhere about 1800 that chart showed a very high crest. From that time it dropped and probably towards the end

of this century the graph would get to its bottom. When it got there the death rate from tuberculosis would be very small, but at the same time those who were liable to tuberculosis, but who had not been in contact with it would be more susceptible. Then, if the organism was about, though possessing no greater degree of virulence, it was quite likely that more people would be affected, that an increase in the death rate would occur and there would be a rise in the chart. It might not rise the next time, however, to what it was in 1850 but as the crest was reached again so the prospective patients' resistance would be increased and again the death rate would fall.

When he was a boy scarlet fever was looked upon as a most serious complaint; there was just as much scarlet fever now, but it was almost treated with absolute disrespect. On the other hand, measles was a common-place thing in his early days; at the present time measles was a greater danger than scarlet fever or even diphtheria. If charts were made of those specific diseases they would find that those charts would follow the usual lines or waves.

He would have liked Dr. Innes, and he hoped that he would remedy this omission when his paper was published, to have included the name of Sir John M'Fadyean amongst the list of those renowned men who had worked so well on tuberculosis. No one in our profession had done more than that man to elucidate the problems of tuberculosis. (Hear, hear.) Sir John's work in that connection had been recognised by the medical profession and in particular by the Royal College of Physicians when they conferred upon him in 1933 the first award of the Weber-Parkes Prize and Medal "for the best work already done in connection with the aetiology, prevention, pathology or treatment of tuberculosis in this country or abroad." That was an award which was very rarely made and only to men of great renown. Sir John M'Fadyean was the only veterinary surgeon who had ever received it and he thought that the members of the veterinary profession should honour the man who was probably the greatest veterinary surgeon who had ever been and who, at the present time, looked as if he was the greatest veterinary surgeon who was ever likely to be. (Applause.)

The Reply

Dr. Innes, in the course of his reply to the points raised in the discussion said, in response to Mr. Steward's remarks regarding cavity formation in the lungs, that this certainly occurred but whether they could be regarded as truly comparable with those found in man was another matter. In the case of the dog and cat, and in many cases of bovine tuberculosis, they were probably simple bronchiectatic manifestations. Nieberle, however, dealt with this type of lesion in great detail and it was impossible that night to give that point any further consideration. Primary infection of such organs as the vulva, vagina and skin in different parts of the body had been repeatedly described. The figures given by Mr. Steward regarding the sites of infection were of great interest, and might with profit be compared with Nieberle's in his most recent works which have appeared this year. Regarding the ultimate freeing of cattle from the disease in this or any country, nothing had been said against eradication of the disease. It was perfectly clear that we were much better off without disease of any variety, but in the case of tuberculosis, surely when the time came, it would be better to combine freedom from infection with preventive immunisation as the former denoted increased susceptibility. The occurrence of epidemic forms of the disease identical with childhood tuberculosis had taken place many times in certain human races which, until infection had occurred, had been tubercle-free. This fact could thus be regarded as proof of the former statement. In connection with udder tuberculosis it might be mentioned again that all forms of the disease were undoubtedly haemic in origin. The various hypotheses put forward that infection could occur in the udder *via* such paths as retrograde lymphatics had never been substantiated. In any case, it was unnecessary to postulate such highly improbable events when a perfectly simple explanation was available, *viz.*, that the bacilli could and did reach the udder through the direct route of the sytemic circulation.

Mr. White had dealt in full with congenital tuberculosis in calves and also acropachia in dogs, and he required to make no further comment beyond saying that he should like to endorse all that he had said. In reference to the question of infection of skeletal muscle, no one would doubt that during the tuberculous bacillaemia, which occurred in all stages of generalisation, bacilli reached muscle. Why lesions should not be more commonly observed was therefore a question difficult to answer. In this respect they had the parallel example of the relative freedom of skeletal muscles from metastatic invasion of malignant tumours. This freedom was, however, more apparent than real, as in breast cancer the pectoral muscles were readily invaded. Further, he doubted if it was necessary to postulate, as many authorities did, that skeletal muscles acted as an unfavourable environment for the growth of tumour cells; in tuberculosis one would have to extend that idea to the case of the tubercle bacilli, which was incorrect.

In reply to Dr. Hare's remarks regarding the "passionate" morbid anatomist, surely no one would attempt to deny that pathology in this country had for long been grossly neglected.

"In this event," said Dr. Innes, "constant reiteration of the fact does no harm as it may be realised by the authorities that be, that the time has come for the subject to take its proper place as one of fundamental importance, and that its linkage with bacteriology is an antiquated custom which must be abolished."

[Time did not permit of a more extended reply to the points raised in the discussion.]

REGULATION OF IMPORTED MEAT

The Department of Health for Scotland have issued revised regulations entitled the Public Health (Imported Food) Regulations (Scotland), 1937, which amend and consolidate the Public Health (Imported Food) Regulations (Scotland), 1932, and which will come into operation on January 1st, 1938. The effect of the regulations will be not only to prohibit the importation of some kinds of meat but also to prevent the importation of any meat, or of any meat product, as defined in the regulations, unless accompanied by an official certificate of the country of origin which has been recognised by the Department.

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The veterinary services of the Kenya Department of Agriculture have been transferred to a separate Department of Veterinary Services, the headquarters of which are at the Veterinary Research Laboratory, Kabete.

The Veterinary Record

June 26th, 1937.

The Poultry Industry

IT is very evident from the publicity given to the matter that the poultry industry is to-day passing through a somewhat critical period in its history. There seems little doubt that the increased prices of foodstuffs, the large import traffic in eggs and poultry products and the comparatively low value of the home-produced articles all have a marked bearing on the welfare of the industry. At the same time, however, it must not be forgotten that the welfare of an animal industry is determined very largely by the health of its stock. We would point out that the N.V.M.A. has drawn attention to this question on previous occasions when evidence was prepared for the consideration of the Commission for the Reorganisation of the Marketing of Eggs and Poultry and of the Poultry Technical Committee, the latter having been set up specially to deal with problems relating to the health of the poultry in the country.

We would again point out that, although within recent years members of the veterinary profession have been engaged in the study of the diseases affecting poultry in this country and have been able to devise methods for the control of some of the most important of the infectious group, much still remains to be done before it can be claimed that the health of our poultry stocks is good. It is certainly important to be able to control infectious diseases, for with all classes of domestic animals we know full well the disastrous results which may follow widespread epizoötics. With many of the important infectious diseases the veterinary profession to-day is in a position to deal adequately. Methods of control vary from the wholesale slaughter of the affected and in-contact birds to the application of biological and chemical agents. To guard against the introduction of highly infectious diseases of poultry from abroad, the Minister of Agriculture and Fisheries has made regulations which are now in operation and further regulations enable the Minister to deal with similar infectious diseases should they be diagnosed in the country. Such methods of dealing with infectious diseases are all important and play their part in maintaining a healthy poultry population.

As we see the position to-day, however, we feel convinced that the health of poultry in this country is to a very large extent dependent on factors other than infectious disease. Poultry husbandry plays a very big part and must receive much more attention in the future. It is true that much research has been carried out into the methods of breeding, feeding, housing, etc., in their relation to the production of eggs and other poultry products, but we are strongly of opinion that such study must be linked up with their effects on the health of the poultry population. There is much room for combined study in which the effects of the various methods of poultry husbandry in practice and advocated to-day are carefully observed. We cannot but feel that, in the past, the veterinary profession has failed to take its proper place in these studies and this may largely be due to its lack of knowledge of poultry husbandry generally. The veterinary profession must take its rightful place in controlling the *health* of poultry as well as other animals, and this can only be accomplished by the acquaintance of members of the profession working on poultry subjects with poultry in health and the results of methods used for the production of eggs, etc., as far as the production of disease is concerned. Until the effects of the various methods adopted in poultry husbandry to-day are carefully studied in relation to the stamina and general health of the birds concerned and their progeny through successive generations, it is conceivable that little further progress will be made in the control of the health of the species. The poultry industry is of great importance in this country and it is vital that the general standard of health should be raised to a state which will prevent the extensive loss from disease in general which is prevalent to-day.

We await with much interest the recommendations of the Poultry Technical Committee of the Ministry of Agriculture and Fisheries.

"I have always held that agriculture is of too fundamental importance to the service of this country to become the mere plaything of party politics. In consequence, I have always tried to devise such a method as would be permanent in its benefit to the industry. You can change a lot by a policy supposing that there is a turn in public opinion, but if the lime and the slag get into the land no General Election can take them out. If the campaign for the eradication of animal disease results in healthier stock no conversion of public opinion can make it more unhealthy."—*Minister of Agriculture.*

ABSTRACTS

[**Buckwheat Poisoning in Cattle.** (Trans. title.) Pichon and Baissas. (1935.) *Rev. gén. Méd. vét.* **44.** 525. 524-529.]

The ingestion of buckwheat (*Polygonum fagopyrum*) renders cattle photosensitive and on exposure to sunshine a severe erythematous dermatitis occurs. Non-pigmented skin only is affected, the lesions occurring principally around the eyes, the muzzle, on those parts of the body covered with fine hairs and on the udder and teats of cows. The irritation is intense and the affected animals may become violent and show symptoms simulating acute colic. It is rarely fatal and symptoms subside if the animals are stabled. Milking of cows with affected teats may be difficult and mastitis not infrequently results from secondary infection.

J. S. P.

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[**The Toxicity of Broomweed (Gutierrezia microcephala) for Sheep, Cattle and Goats.** Matthews, P. F. (1936.) *J. Amer. Vet. Med. Ass.* **88.** 1. pp. 45-61. (1 table, 3 figs., 2 refs.)]

Feeding tests of cattle, sheep and goats with broomweed in 1933 caused no toxic effects. Similar tests in 1934 produced marked symptoms in most of the test animals and the death of some of each species.

The symptoms included anorexia, listlessness and arching of the back. In severe cases pronounced haematuria followed within 48 hours (this symptom was produced by the largest daily doses, the smaller doses causing a nephritis without haematuria). A slight icterus could be detected in the whites of the eyes.

The pathology of these cases showed an anaemia with an imbalanced increase of polymorphonuclear leucocytes, but only a mild total leucocytosis. Non-protein nitrogen was as high as 130 mg. per 100 c.c. of blood in some cases. Icterus was present in tendinous tissues. The kidneys were always swollen and severe cases had multiple cortical haemorrhages. The minute pathology of the kidneys and livers showed all the usual changes leading to necrosis.

Fatal doses of the plant were 8 lb. given during five days for sheep, 24 lb. in three days for cattle and 11 lb. in 14 days for goats.

The author failed to produce abortion, but suspects this effect results after natural feeding under conditions of drought. He describes the plant and its distribution in America (principally in the State of Texas), and suggests that the sporadic nature of the losses sustained is governed by bad grazing conditions caused by drought.

C. V. W.

[**Advantages of Electro-Surgery.** Tinker, M. B. (1936.) *Cornell Vet.* **26.** 179-182.]

The author, evidently engaged in human surgery, outlines the advantages briefly under five headings: (1) the avoidance of the need for ligating blood vessels; (2) the saving of time when operating on vascular tissues; (3) the prevention of accumulation of serum in the wound; (4) the destruction of bacteria by the electric current, and (5) in operating on malignant neoplasms, electric methods seal off blood vessels, etc., thus hindering metastasis.

Two types of electro-surgical apparatus are in use—the H.F. spark gap and the radio tube systems. [Two professors of veterinary surgery in German veterinary colleges—Henkels, of Hanover, and Bolz, of Berlin, and later Giessen—have used surgical diathermy on large and small animals and recorded their experiences in 1933 and 1932 respectively. Henkels reported good results in the fulguration of tumours by the spark gap method, but reported the following disadvantages—the skin is very resistant to the cutting current and first intention healing is not obtained; precision in directing the "knife" is inferior to that of the scalpel, because of the weight of the cable on the handle; there is the trouble of applying and keeping moist the negative electrode, which causes a burn if allowed to dry or move.

Bolz reported good results in the removal of tumours, including two on the eye, and of excising masses of tissue in dermatitis verrucosa in grease. Electric diathermy is more painful than the knife, hence anaesthesia is more important. Electro-coagulation is very useful for reducing the size of crater-like wounds after tumour excision: the raw surface is "cooked" and decreases at once by over 50 per cent. in area, then heals under a scab and by granulation. Healing is always slower in electro-surgery than in ordinary surgery.]

J. E.

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[**Stricture of Rectum of a Dog: Method for Surgical Treatment.** Schlotthauer, C. F., and Stalker, L. K. *J. Amer. Vet. Med. Ass.* **43.** 4. 533-536. (1 fig.)]

The authors, who have encountered intestinal stenosis in a cow and two dogs, discuss the aetiology of the condition and summarise the commonly adopted lines of treatment.

One of the two cases seen in the dog is reported in detail.

The subject, an adult Boston terrier bitch, had an annular stricture 4 cm. in length, approximately 8 cm. from the anus. The lumen of the bowel at the site of stenosis was only capable of dilating to the diameter of 1 cm. After cleaning the lumen of the rectum with

warm water irrigations, an exploratory laparotomy was performed. An incision was made into the lumen of the bowel through the stricture in the longitudinal direction, but was sutured by means of three rows of catgut sutures in the transverse direction (illustrated). The abdominal wounds were closed in the usual manner, and seven months after the operation the dog is reported to be normal in every respect.

C. F.

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[The Treatment of Ascariasis in Chickens. LEVINE, P. P. (1936.) *Cornell Vet.* **26.** 2. 120-127.]

For many years tobacco dust has been advocated as a means of control, and for the treatment for roundworms in poultry, and many poultrymen have been incorporating it in the mash as a regular part of the ration. From the experiments recorded in this paper it would appear that the practice of feeding tobacco dust continuously to prevent ascarid infection is ineffective, while the feeding of the dust for four weeks to older birds for expelling adult worms was less effective than a single dose with a nicotine powder.

Tobacco dust (nicotine content 1·78 per cent.) fed to chicks continuously from the day of hatching in concentrations of 2, 4, 6 and 8 per cent. in a dry mash did not prevent the hatching of embryonated eggs of *Ascaris lineata* and the invasion of the intestinal mucosa by the larvae. Tobacco dust in 2 per cent. concentrations did not show any evidence of toxicity for chicks, but higher concentrations were toxic and 40 per cent. of the chicks fed on the 8 per cent. level died of poisoning.

There were no significant differences in worm numbers between tobacco-treated (2 per cent. concentration) and control birds fed with the same number of embryonated ascarid eggs until the seventh week of parasitism. Since in another experiment it was found that 88 per cent. of the mature worms were removed from a group of pullets by such treatment continued for four weeks, it would appear that the immature worms are less susceptible to tobacco treatment than adults. A single dose with a nicotine compound powder removed all of the worms from 45 pullets parasitised with adult worms.

R. F. G.

An educational cinematograph film, entitled, "A Pure Milk Supply," has recently been completed by certain members of the staff of the Edinburgh and East of Scotland College of Agriculture. It deals with the elimination of disease from dairy stock, and with the methods employed in the hygienic production and handling of milk.

CLINICAL COMMUNICATION

The Safety and Efficiency of Nembutal

H. C. P. KING, M.R.C.V.S.,
KENNINGTON CROSS, LONDON

Relative to the scanty remarks of Professor George F. Boddie as recorded in the *Veterinary Record*, of May 8th, in his reply at the Western Counties Division Meeting, on March 24th, condemning the use of nembutal as an anaesthetic—using his own words—"owing to the extremely narrow line between the anaesthetic and the toxic dose," I feel it incumbent on me to confirm the findings of Professor J. G. Wright and to thank that gentleman for placing the technique and administration of nembutal so ably in our hands.

Since its introduction we have practically ceased to use any other anaesthetic and find that provided it is given intravenously in the correct doses and very slowly at that, we have nothing but praise for it. The calculated dose can be exceeded with safety but it is usually unnecessary except in the younger dogs.

With respect, may we venture to suggest that Professor Boddie's bad results are much more likely to be due to faulty technique than to any other cause. It is most essential that entrance into the vein having been made, the injection should be given very, very slowly—during which time it is possible to assess the degree of anaesthesia required and to inject more or less than the calculated dose as occasion demands.

In order to substantiate the opinion expressed, we append a list of cases which have received nembutal for operative or examination purposes. The list comprises 40 cases of all sorts of dogs and we have yet to see a fatality from its use or any evidence of malaise resulting, it being a fact that the majority of dogs will readily partake of a normal meal within about 15 hours of its administration; neither has it been necessary to administer any restoratives.

This is a great stride in advance of the previously used chloroform and morphine which we have now almost relegated to the limbo of forgotten memories.

The passing of Mr. J. B. Bagshaw, the great authority on the English sheep dog has come as an irreparable loss to members of the International Sheep Dog Society.

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At Caernarvon 33 summonses were taken out because dealers in livestock failed to keep a record of the disposal of all animals moved from their premises. Every trader dealing in livestock is required by law to keep such a record.

THE SAFETY AND EFFICIENCY OF NEMBUTAL

List of Cases

Dog.	Age.	Weight in Lbs.	Dose, Grains.	Condition.	Operation.	Remarks.
1. Terrier Bitch	3 yrs.	14	3½	—	Hysterectomy	Had 2 live and 3 dead pups and 1 retained. Successful.
2. Airedale ...	10 yrs.	31	5¼	Fair	Reduction of luxated hip	Operation successful. Subsequently destroyed owing to fractured acetabulum.
3. Terrier Bitch	5 yrs.	19	4½	Poor	Hysterectomy : pregnant	Operation successful. 1 dead pup.
4. Spaniel Dog...	—	32	6½	Good	Hernia	Operation successful.
5. Spaniel ...	4 mths.	9	2½	Good	Experimental Tenotomy	Successful.
6. Labrador ...	8 yrs.	73	13½	Good	Extraction of teeth	Successful.
7. Fox Terrier...	4 yrs.	29	5¾	Good, but toxic	Septic thigh (dog bite)	Successful.
8. Terrier Dog...	3 yrs.	18	4	Good	Excision eyeball	Successful.
9. Airedale Bitch	9 yrs.	57	12	Good	Cystic mammary gland	Successful.
10. Peke	7 yrs.	14	3	Good	Extraction of teeth	Successful.
11. Pom.... ...	10 yrs.	8	2	Poor, definite heart miss	Extraction of all teeth	Successful.
12. Terrier ...	10 yrs.	24	5½	Good	Teeth	Successful.
13. Terrier ...	2-3 yrs.	33	6	Good	Removal of foreign body, tongue	Successful.
14. Bedlington ...	3-4 yrs.	35	8	Very fat, toxic	Hysterectomy ; pregnant	Operation successful. Subsequently died.
15. Terrier ...	6 mths.	15	2¾	Good	Laparo-hysterectomy	Had 3 live pups 24 hrs. before. Operation successful. Six dead pups.
16. Scottie ...	4 mths.	15	3	Good	Foreign body, bowel	Successful.
17. Cairn Bitch ...	3 yrs.	7	1½	Heart	Extraction teeth	Successful.
18. Peke.... ...	12 yrs.	15	3	Fat	Extraction teeth	Successful.
19. Dalmatian ...	7 yrs.	95	15	Very fat	Extraction teeth	Successful.
20. Great Dane ...	7 yrs.	100	19	Good	Extraction teeth and examination jaw	Successful.
21. Chow ...	—	59½	12	Good	Entropion both eyes	Successful.
22. Scottie ...	8 mths.	14½	3	Good	Foreign body, oesophagus	Successful.
23. Border Terrier	9 yrs.	20	4	Good	Extraction teeth and sundry warts	Successful
24. Terrier ...	8 yrs.	28	6	Fat	Extraction teeth	Successful.
25. Alsatian ...	2 yrs.	60	8	Toxic	Bowel re-section, foreign body	Successful.
26. Spaniel ...	6-7 mths.	26	5	Good	Fracture left humerus. Plaster cast	Successful.
27. Terrier ...	2 yrs.	32	6½	Good	Fracture right radius. Plaster cast	Successful.
28. Peke.... ...	7 yrs.	12	2½	Poor and heart	Excise eyeball	Successful.
29. Terrier ...	3 mths.	10½	3	Good	Umbilical hernia	Successful.
30. Terrier ...	1½ yrs.	25½	5½	Good	Upward luxation right hip, 4 days' duration. Irreducible	Anaesthesia satisfactory. Subsequently destroyed.
31. Irish Terrier	2 yrs.	33½	7	Good	Removal cystic calculus	Successful.
32. Alsatian ...	7 mths.	63	13	Good	Foreign body, mouth examination	Successful.
33. Mastiff ...	9 mths.	74	15	Good	Examination pelvis, shoulder, by X-ray	Successful.
34. Peke.... ...	11 mths.	8	2	Good	Excise eyeball	Successful.
35. Terrier ...	4-5 yrs.	30	5½	Good	Upward luxation hip and fracture shaft of ilium—reducible but impossible to retain. Subsequently destroyed	Anaesthesia successful.
36. Scottie ...	3 yrs.	26	5½	Good	Operation, ears	Successful.
37. Terrier ...	9 yrs.	27	5½	Good	Extraction teeth	Successful.
38. Spaniel ...	7 yrs.	45	10	Good	Extraction teeth	Successful.
39. Dachshund ...	1 yr.	12	3	Good	Umbilical hernia	Successful.
40. Terrier ...	13½ yrs.	23	4⅝	Fat	Mammary growth and teeth extraction	Successful.

REPORT

Cumberland County Council

REPORT OF THE CHIEF VETERINARY OFFICER FOR THE YEAR 1936

In the above report, issued by Captain R. Simpson, F.R.C.V.S., D.V.S.M., a year of outstanding achievement is recorded, and some of the administrative arrangements instituted by the Cumberland County Veterinary Department, particularly in connection with the Milk (Special Designations) Order of 1936, might be adopted with advantage by other local authorities.

Section I of the report deals with the administration of the Milk and Dairies Acts and Orders, and under the Milk and Dairies Order of 1926 approximately 4,000 dairy herds, comprising 57,000 cows and heifers, were registered during the year. Visits were paid by the staff to 1,930 non-graded herds and 25,521 cows were examined, resulting in the detection of 55 animals clinically affected with tuberculosis and 247 cows suffering from mastitis or some other pathological condition.

Under the Milk and Dairies (Consolidation) Act, of 1915, only four complaints were received from outside sources as to tuberculous infection in milk produced within the county, and in addition milk sampling in the county area led to the detection of a further eight instances of tuberculous infected milk. In the previous year the number of positive samples detected by milk sampling was 13, and in view of the fact that a larger number of samples was examined during the year under review the decline in the number of positive cases is distinctly encouraging.

During the year 1,101 milk samples were collected by the sanitary inspectors of the local authorities, under a joint scheme whereby the County Council and the sanitary authorities share the laboratory costs, and in 728 instances the milk was submitted to biological examination. Only 1 per cent. of these samples proved to contain tubercle bacilli.

In connection with the Milk (Special Designations) Order of 1936, the testing of tuberculin-tested herds was performed by approved veterinary practitioners, with supervision by the whole-time staff in order to secure uniformity, and the half-yearly clinical examinations of these herds were carried out by the Veterinary Department without charge to the owners. During the year the number of tuberculin-tested producers increased from 22 to 42, comprising approximately 1,537 cows and heifers, and the estimated amount of tuberculin-tested milk being produced in the county was 892,462 gallons per annum.

It is very refreshing to note that in Cumberland the administration of the Accredited Milk Scheme is entirely controlled by the Veterinary Department, acting in close co-operation with the sanitary authorities. During the year 269 licences were granted, an increase of 72 over the previous year, and 957 visits were paid by the staff to these herds, in the course of which 23,018 cows were inspected. Of these, 38 were found to be affected with tuberculosis and 68 were suffering from mastitis or some other condition.

Approximately 80,032 gallons of milk were supplied during the year to 213 schools in the county, and this milk was obtained from 117 farms under the supervision of the Veterinary Department.

Under the Attested Herds Scheme of the Ministry of Agriculture only six herds in the county were registered at the end of the year 1936, and, as Captain Simpson states, it is indeed unfortunate that in a breeding county such as Cumberland, which offers great possibilities for a properly directed eradication scheme, some of the funds available cannot be utilised to render financial help in the intermediate stages of eradication.

Section II of the report is devoted to work arising in connection with the Diseases of Animals Acts. Under the Tuberculosis Order, of 1925, the number of cattle clinically examined was 5,637, and 237 animals were slaughtered, *post-mortem* examination showing that 41 were affected with tuberculosis of the udder, 52 with tuberculous emaciation, and 143 with chronic cough. The number of " advanced " cases was 107 (equal to 45·2 per cent.) and the average amount of compensation paid to owners was £3 18s. 2½d. per animal.

During the year 101 suspected cases of anthrax were investigated, and four outbreaks were confirmed. Sheep scab has rapidly declined in the county since 1934, and only four outbreaks were detected during the year under review. Investigations were also made into 114 suspected cases of swine fever, 30 of which were confirmed.

The veterinary staff continued to make periodic visits to market centres, with a view to the detection of animals suffering from scheduled diseases. In connection with the Warble-Fly (Dressing of Cattle) Order, of 1936, large numbers of cattle were examined by the staff during the dressing period, and advice was freely given to the farmers in connection with treatment methods.

This comprehensive and valuable report concludes with statistics and a diagram showing the incidence of bovine tuberculosis in the County of Cumberland during the past four years.

Royal College of Veterinary Surgeons

ANNUAL GENERAL MEETING

The ninety-fourth annual general meeting of the Royal College of Veterinary Surgeons was held at 10, Red Lion Square, Holborn, at noon on Thursday, June 3rd, 1937, Mr. J. Willett, the President, being in the Chair. There were present: Mr. J. D. Blaxland, Lieut.-Colonel J. W. Brittlebank, Professor J. B. Buxton, Mr. J. C. Coleman, Majors G. W. Dunkin, F. L. Gooch, Sir Frederick Hobday, Messrs. G. H. Livesey, J. W. McIntosh, A. MacKenzie, Lieut.-Colonel W. S. Mulvey, Dr. Share-Jones, Lieut.-Colonel P. J. Simpson, Major F. J. Taylor, Captain W. K. Townson, Colonel G. K. Walker, and Professor G. H. Wooldridge.

The Secretary read the notice convening the meeting, as published in the *London Gazette* of May 7th, 1937.

Apologies for absence had been received from Dr. O. Charnock Bradley, Mr. H. W. Dawes, Captain T. M. Mitchell, Mr. J. Holroyd, Mr. G. H. Locke, Captain R. Simpson, Major A. B. Mattinson, Dr. Whitehouse, Mr. P. F. Dolan, Professor J. J. O'Connor, Mr. W. Nairn, Mr. Jackson Young, Lieut.-Colonel Dunlop Young, Mr. A. Spicer, Captain S. Villar and Captain W. G. Wragg.

The minutes of the previous annual general meeting, held at the Royal (Dick) Veterinary College, Edinburgh, on June 4th, 1936, were read by the Secretary and approved by the meeting as a correct record.

Election of Members of Council

The Secretary read the Auditors' Report on the Scrutiny of Votes for the election of eight members of the Council, as follows:—

28, Queen Street, London, E.C.4.

We certify we have checked the voting papers sent in for the election of eight members of the Council of the Royal College of Veterinary Surgeons, and the numbers of votes are set out below:—

W. Nairn	889
P. J. Simpson	861
F. T. G. Hobday	837
J. F. Craig	829
G. W. Dunkin	800
W. K. Townson	740
R. Simpson	731
A. B. Mattinson	713
G. C. Webster	448
T. Hare	401

There were ten spoiled papers and 21 were received too late.

(*Signed*) Woodhouse and Wilkinson.

The President: Gentlemen, you have heard the result of the voting for the election of new members of the Council, and I declare the following gentlemen elected:—

W. Nairn, P. J. Simpson, F. T. G. Hobday, J. F. Craig, G. W. Dunkin, W. K. Townson, R. Simpson and A. B. Mattinson.

The Secretary: I have received from the Registrar of the Veterinary Council of the Irish Free State as Returning Officer for the Irish Free State a letter announcing that Mr. J. Dodd, of Stephen Street, Sligo, has been re-elected a general member of the Veterinary Council and Representative of the Irish Free State on the Council of the Royal College of Veterinary Surgeons.

Annual Report

The President: In presenting to you, on behalf of the Council, the annual report for the year ended March 31st last, I would like to call your attention specially to one or two points. The report, of course, speaks for itself, but it is only a very brief record of the year's work. It will be noticed that the work of the Examination Committee occupies four pages, if we include the amendments to Bye-laws reported at page 3, for these refer exclusively to examination matters. The committee has now completed the plans for the Fifth Examination, the first of which is to be held in July. The candidates who are completing the Four Years' Course are diminishing in number rapidly, and it is likely that some plan will be evolved to transfer the few remaining ones to the Five Years' Course. You will see that over 1,000 students were examined in the course of the year. This is the largest number ever examined in one year, but the peak does not seem yet to have been reached. The number of graduations this year will not be large, because though the Four Years' Course candidates are petering out, the number of students in the Final Year of the Five Years' Course has not yet reached normal. Though, therefore, there is a dearth of new graduates at the moment, it is anticipated that the graduations during the next few years will be double that obtaining during the past decade.

The work of the Registration Committee is reported at pages 6 and 7 of the report. I think there is no matter calling for special comment, but I shall be glad to answer any questions later on when the adoption of the report is being considered.

The Parliamentary Committee has been successful in securing amendments to certain Bills so as to provide that inspection of stables shall be carried out by registered veterinary surgeons. I am glad to say also that the representations made to the War Office urging increased emoluments for Majors of more than 20 years' service have been successful.

In regard to the Finance Committee, a very important step has been taken in acquiring the freehold of the adjoining building. The first floor is available for immediate occupation but it is likely that the Council will decide not to disturb the tenants of the remaining floors for the time being. Additional accommodation is urgently required for the office staff, for library expansion, and for committee and waiting rooms.

The report of the Library Committee indicates a steady increase in this part of the work of the Council. More and more the resources of the library are being made use of, and, although the maintenance of a library is a costly business, it is the view of the Council that a most useful service is being rendered to the profession by the library.

The rest of the annual report consists of the audited Statement of Accounts, which calls for no special comments from me, but I am sure the Treasurer will be happy to answer any questions.

I now formally move the reception and adoption of the annual report and statement of accounts.

Lieut.-Colonel J. W. Brittlebank: I beg to second the motion.

The President invited questions or comments upon the report and balance sheet, but as there was none the motion was put to the meeting and carried.

Presentation of Prizes

The Secretary: I am glad to inform you, Mr. President and gentlemen, that we have present in this room two prizewinners: Mr. J. D. Blaxland, who obtained the second FitzWygram Prize, and Mr. F. D. Asplin, who was awarded the Walley Memorial Prize. Mr. G. K. L. Knott, the winner of the first FitzWygram Prize, is unfortunately unable to attend this meeting to receive the certificate for the prize, as he is abroad. Both of these prizewinners were students of the Royal Veterinary College.

The Secretary called these gentlemen to the dais, and the President presented to them the certificates for the prizes they had won.

Equestrian Group for Royal Veterinary College

Major G. W. Dunkin: There is no item on the agenda for any other business, but I should like, with your permission, to raise a point which I consider of some importance. I desire to draw the attention of the profession to the fact that an offer has been made to the Royal Veterinary College, Camden Town, of an equestrian group created by Mr. Adrian Jones, that eminent sculptor and veterinary surgeon and graduate of the Royal Veterinary College. It is a really magnificent piece of statuary and is called "Duncan's Horses." For the past few years, it has rested, on loan from Mr. Adrian Jones, in the grounds of the Crystal Palace. During the recent lamentable fire which occurred to that historic building "Duncan's Horses" escaped all but, I understand, minor injuries. Mr. Adrian Jones has, I gather, always wished that at least one of his pieces of work should rest in the grounds of the Royal Veterinary College, and he has finally decided that he would like the Royal Veterinary College to have this particular sculpture. This group is, I believe, anatomically excellent. You will, of course, understand that there are several expenses which will be incurred in transit and in other ways—in storage, for example. Certain inquiries have been made to ascertain whether or not the gift could be accepted if the money were forthcoming. Well, you will realise that the Royal Veterinary College is not able and could not appeal for funds for what is, after all, a frill and not a part of the building construction scheme, for which they are already appealing for large sums, as you know, and it occurred to me, and to others, that this golden opportunity of securing a really magnificent piece of sculpture and, not only that, the work of a veterinary surgeon and a graduate of that College, should not be missed.

I have ascertained that the total cost entailed in removing the statue from the Crystal Palace grounds, which I may tell you has already been done, and placing it in a suitable store, casting the group in bronze—at the moment, it is in plaster cast—the construction of a granite pedestal and certain contingencies, repairs and that kind of thing, would approximate to £1,800. I hear on one or two sides that that is a lot of money. It seems a lot to us individually, but actually, I understand, that is not a lot of money for the amount of work to be put into this particular statue. The statue is about ten feet high, and across its base is about seven to eight feet.

Soon after the fire at the Crystal Palace, when efforts were being made by the Crystal Palace authorities to secure a complete clearance of the grounds, the matter became extremely pressing and urgent, and it was necessary to come to some kind of decision as to what should be done with this statue. In other words, if the gift which Mr. Adrian Jones so generously made to the Royal Veterinary College were to be accepted, it had to be accepted then and there, otherwise the group would be broken up. It had to be removed from the Palace grounds and is now in store.

I have made certain personal efforts to secure at least some subscriptions towards the fund necessary, and I am happy to tell you that I have secured a promise from a gentleman

deeply interested in the profession to provide the sum of £500 as a first subscription. This gentleman's modesty is equal to his generosity, however, and I am not permitted to tell you his name, for he wishes to be anonymous.

My object in raising this question to-day is quite clear. It is that the position, as I have tried to outline it, should be properly ventilated through the profession with the view and also the hope of raising the balance of money which will be required, namely, something between £1,000 and £1,300.

Thank you, Mr. President, for the opportunity of raising this question.

The PRESIDENT: I was very pleased to give you the opportunity of doing so, Major Dunkin. Now the question will go out to the profession, and no doubt there will be a ready response.

Major DUNKIN: Thank you, sir.

Sir FREDERICK HOBDAY: I should like very much, as Principal of the Royal Veterinariy College, to support this appeal. This statue was offered to us by Mr. Adrian Jones some four years ago. I had asked him if he could give us a souvenir of his great work, and this was the one which he chose. At that time the money wanted for the casting was much greater than at the present time. I am sure that, if a little stimulus could be given from this meeting to the profession, the money required would be found, especially as Major Dunkin has enthusiastically found such good support already. £500 is a wonderful start, and I have no doubt that we shall get the rest from the friends of the College and members of the profession.

Major DUNKIN: I have here a photograph of the statue which members present may like to see.

Sir FREDERICK HOBDAY: There is a big photograph of it also at the College. It is a very beautiful statue. [A photograph was reproduced in our last issue.—*Editor.*]

Major F. LEEDS GOOCH proposed a vote of thanks to the President for his services in the Chair, and this was heartily carried.

ROYAL COLLEGE OF VETERINARY SURGEONS

DIPLOMA IN VETERINARY STATE MEDICINE

On the results of the examination held by the Royal College of Veterinary Surgeons in Edinburgh, from June 10th to 16th, the following candidates have been awarded the Diploma in Veterinary State Medicine:—

Barr, T. F. F.
McKinnon, J. A.
Moodie, D.
Reid, James.
Taylor, J. F. L.

Victoria Veterinary Benevolent Fund

GENERAL MEETING OF MEMBERS

A general meeting of members of the Victoria Veterinary Benevolent Fund was held, immediately after the annual general meeting of the Royal College of Veterinary Surgeons, at 10, Red Lion Square, Holborn, on Thursday, June 3rd, 1937, Lieut.-Colonel J. W. Brittlebank, President of the Fund, being in the Chair.

There were present: Professor J. B. Buxton, Majors G. W. Dunkin, F. L. Gooch, Messrs. G. H. Livesey, J. W. McIntosh, A. MacKenzie, Lieut.-Colonel P. J. Simpson, Major F. J. Taylor, Colonel G. K. Walker, Mr. J. Willett and Professor G. H. Wooldridge.

The minutes of the previous general meeting, having been published, were, on the motion of the President, taken as read.

The Secretary announced apologies for absence from Dr. Bradley, Mr. Nairn, Captain Sidney Villar, Mr. W. Jackson-Young, Colonel Dunlop Young, Captain W. G. Wragg and Mr. Arnold Spicer.

Election of Officers

President.—Lieut.-Colonel BRITTLEBANK: The next business before the meeting is the election of President. I have held the position for a long time and, if you think you would like to have a new President, please do not hesitate to make a change.

Mr. J. W. MCINTOSH: I should like to propose the re-election of Colonel Brittlebank. I do not think it is possible to get a better President, and I am sure that every member will support the view that we should ask him to continue to serve the Association in that position.

Professor G. H. WOOLDRIDGE: I have great pleasure in seconding the proposition. I think it would be a calamity if at the present time we were to lose the very active services of our present President. We know the enormous work which he does in this office and how thoroughly he has at heart the objects of the Association and the Fund.

Mr. MCINTOSH put the proposition to the meeting and it was carried unanimously.

The PRESIDENT: Thank you very much. I will continue to do my best for the interests of the Fund and of all those whom it is our duty to help.

Vice-Presidents.—The SECRETARY: In regard to the election of four Vice-Presidents, I have received a letter from Captain Sidney Villar in which he says that owing to advancing years and indifferent health, he has decided to tender his resignation as a Vice-President of the

Association, and member of the Council. He adds that this is done with great regret after so many years' association with the Fund, for he attended its first annual meeting, and has been a member ever since.

The President: Captain Villar has been talking for some time in this way. I know he feels it keenly that he is unable to give the time that he would like to give to the work of the Fund. Personally, I think the kindest thing to do would be to accept Captain Villar's resignation, but at the same time to place on record our very high appreciation of all that he has done in working for the Association in the past. There are very few people who have done so much as Captain Villar in a quiet way. I move that Captain Villar's resignation be accepted with great regret and this general meeting of members express specially their deep appreciation of the many faithful years of service which he has given to this Fund. Is that your wish?

The motion was unanimously agreed to.

Mr. J. W. McIntosh: I beg to propose that Professor Wooldridge, who has taken a very active interest in the Benevolent Fund for many years, be elected to take the place of Captain Villar among the Vice-Presidents, and that Dr. O. Charnock Bradley, Mr. G. P. Male and Captain J. R. Rider be re-elected Vice-Presidents.

This was seconded.

Professor Wooldridge: May I be permitted to speak? I feel that if Sir John M'Fadyean could be appointed Vice-President it would be desirable to retain his more intimate association with the Fund in that capacity.

The President: Sir John is already a member of the Council. He represents the Royal College of Veterinary Surgeons. At the moment, I have one very excellent nomination for the position vacated by Captain Villar. If there are no other nominations, I shall put the proposition which has been made by Mr. McIntosh.

The proposition was carried unanimously.

Honorary Treasurer.—Mr. J. Willett: I have much pleasure in proposing the re-election of Mr. Arnold Spicer as Honorary Treasurer.

The President: We could not do better. Mr. Spicer is a most excellent Treasurer because he very often differs with the President. (Laughter.)

The Secretary: May I add that since Mr. Spicer became a member of the Association he has contributed to the Fund in special donations of £30 and upwards no less a sum than £500. (Applause.)

The re-election of Mr. Spicer was heartily and unanimously carried.

Honorary Secretary.—The President: I take the pleasure myself of proposing that Lieut.-Colonel P. J. Simpson be re-elected Honorary Secretary.

Several Members: I beg to second that.

The President: Everyone wants to second that.

The proposition was carried with acclamation.

Lieut.-Colonel Simpson: I thank you, Mr. President, for your kind words and you, gentlemen, for re-electing me.

Auditors. — The re-election of Messrs. Woodhouse and Wilkinson as Auditors was put to the meeting by the President and carried.

Annual Report and Statement of Accounts

The President: I am glad to be able to present, on behalf of the Council, so favourable a report as the one you have before you. I hope you will agree that it records a year of excellent work and progress. The Fund has been established now 40 years and its activities can be said to have grown by leaps and bounds.

The total amount paid in relief by the Fund since its establishment is £25,980 13s. 8d., nearly £26,000. The total capital of the Fund at cost, including the Trust Funds, is £32,295 16s. 9d., an increase of £1,779 on the previous year. During the year 1936, 49 distressed veterinary surgeons, and widows of veterinary surgeons, were relieved, and the total amount spent on relief was £1,451 4s. 5d.

We have received many welcome gifts during the year, which are shown on page 8 of the report. Perhaps the greatest benefactor of the Fund is the Ladies' Guild. During the six years of its existence it has contributed no less a sum than £797 11s. to the Fund. On behalf of the Council I would like to take this opportunity of saying how much we appreciate this splendid result of their work. To all the ladies who have so generously contributed their time and talents to this cause, we would say "Thank you most sincerely."

Mention must also be made of the North of England Ladies, who year after year send large contributions to the Fund. Without the assistance of the ladies we should be very much poorer. I wish the gentlemen who form the bulk of the profession would help us a little more. Out of 3,500 members on the Register of Veterinary Surgeons, only the odd 500 are members of the Fund. One-seventh of the profession subscribe; six-sevenths do not. That proportion ought to be the other way round. ("Hear, hear.") There must surely be a large number of members among those 3,000 who could subscribe 10s. 6d. a year without missing it. If you, here, know any of them, I suggest that you should pass on to them a copy of the annual report and persuade them to fill up the Banker's Order form at the end of it. Every

little helps and each new subscription helps to make the task of the Council a little easier.

I would also like to mention the use of collecting boxes. I believe that many more of these could profitably be used in the surgeries and consulting rooms of veterinary surgeons. Often enough you have a client whom you feel you cannot charge the ordinary fees, but he might be asked to put something in the collecting box. If anyone would like a collecting box for this purpose, will he kindly let the Secretary know.

I now formally move the reception and adoption of the annual report and statement of accounts, which are open for discussion.

The report and accounts were taken page by page, the President observing at page 9: You will notice that we make rather a feature of Christmas gifts; these are much appreciated.

The President put the motion to the meeting and this was carried.

Election of Ten Members of the Association to Serve on the Council

The Secretary: The present members of the Fund on the Council are: Professor J. B. Buxton, Mr. F. Leeds Gooch, Mr. G. H. Locke, Major-General Sir John Moore, Mr. J. Willett, Mr. William Woods, Mr. W. G. Wragg, Professor G. H. Wooldridge, Lieut.-Colonel Dunlop Young and Mr. Jackson Young. As Professor Wooldridge takes the office of Vice-President, there is one vacancy to be filled.

Professor Wooldridge: We have now a certain number of life members of the Fund who are ladies. May I ask, are they eligible for the Council? If so, it would be a wise step to appoint a lady on the Council.

The Secretary: The regulations governing election to the Council are that one must be a member of the Fund. Life members are also eligible.

In reply to a question the Secretary added: The Rules state "The qualifications of an ordinary member shall be an annual payment to the Association of a sum of 10s. 6d."

The President: That seems clear. Anyone can be a member.

Mr. McIntosh: I should like to support Professor Wooldridge's suggestion, because ladies have done excellent work for a large number of years and if we had one or two of them on the Executive of the Benevolent Fund it might stimulate their efforts and give them even greater interest in the Fund than now.

Professor Wooldridge: If in order, I was going to propose that Mrs. Nickinson be elected to the Council.

The Secretary: Mrs. Nickinson is on the Council as representing the Ladies' Benevolent Guild.

Professor Wooldridge: All the same, I feel we shall be doing right if we elect her directly as a representative of the members of the Fund on the Council. That may or may not make a difference in the representation of the Ladies' Benevolent Guild. I propose that Mrs. Nickinson be elected a representative of the members of the Fund on the Council.

Mr. McIntosh seconded the proposition.

The President: I think that proposition will appeal to everybody.

The proposition, on being put to the meeting, was carried.

The President: That will leave the way open for the Ladies' Veterinary Benevolent Guild to make their own nomination for another representative on the Council of the Fund.

I now propose that Mr. A. MacKenzie be elected to the Council as one of those representing the members of the Fund.

The meeting expressed its agreement to this proposition.

Mr. Willett then moved that the following ten members of the Association be elected to serve on the Council as representing the members of the Fund: Professor Buxton, Mr. F. L. Gooch, Mr. G. H. Locke, Mr. A. MacKenzie, Mr. J. Willett, Mr. Wm. Woods, Mr. W. G. Wragg, Mrs. M. Nickinson, Lieut.-Colonel Dunlop Young and Mr. Jackson Young.

This motion was formally seconded and carried.

Mr. McIntosh moved a cordial vote of thanks to the President for his services in the Chair.

This was carried with acclamation, and the proceedings terminated.

"FADS" IN SHOW HORSES

Mr. John Strachan, Crichie, Fyvie, deprecated the awarding of chief honours at leading shows to horses with useless fancy points when he demonstrated on Clydesdale geldings to members of a Kincardineshire agricultural club. Mr. Strachan said it was time they got away from fads about feet, hair, movement, and other things. Encouragement should be given to animals of the utility type. What they wanted was a good thick horse with middle and ribs, strong, active, and ready to shift a load.

* * * * *

DANGEROUS DRUGS ACTS

An Order in Council has been made to the effect that Part III of the Dangerous Drugs Act, 1920, shall on and after July 1st, 1937, apply to all preparations of esters of ecgonine or of their respective salts and to all preparations of ecgonine containing less than one-tenth per cent. of ecgonine and to all preparations of esters of morphine in the same manner as the said Part III applies to the drugs mentioned in sub-section (1) of section eight of the Dangerous Drugs Act, 1920.

N.V.M.A. DIVISIONAL REPORT

Central Veterinary Society

"The Pathogenesis of Tuberculosis in Domestic Animals according to the Nieberle School," discussed in an able and well-illustrated paper by Dr. J. R. M. Innes, of the Institute of Animal Pathology, Cambridge, was the principal subject considered at the May meeting of the Central Division, N.V.M.A., which was held on the 6th of the month at the Conway Hall, Red Lion Square, London, with the President (Professor J. G. Wright, F.R.C.V.S.) in the chair.

There were also present the President of the Royal College of Veterinary Surgeons (Mr. J. Willett), Captain L. S. Balls, Mr. W. P. Blount, Mr. W. Brown, Mr. H. E. Bywater (Hon. Secretary), Dr. Fred. Bullock, Mr. J. J. Davies, Captain H. S. A. Dunn, Miss C. M. Ford, Dr. Tom Hare, Miss K. Hernaman-Johnson, Mr. J. W. H. Holmes, Major W. B. Howe, Mr. Herbert King, Mr. Nevill King, Captain W. J. Leyshon, Dr. J. McCunn, Mr. G. H. Mills, Miss K. Morant, Miss K. Sanderson, Mr. N. J. Scorgie, Mr. J. S. Steward, Dr. A. W. Stableforth, Captain R. J. Stow, Captain W. K. Townson, Miss O. Uvarov, Major R. F. Wall, Mr. E. G. White, Major G. Williamson and Captain T. L. Wright. Captain F. G. Buxton, Mr. W. H. Chase, Mr. J. P. James, Mr. L. Pilcher, Miss M. R. Silverman and Mr. J. T. Turney were present as visitors.

The minutes of the April meeting of the Society, as published in the *Veterinary Record*, were taken as read, confirmed and signed.

Correspondence.—(1) From Professor J. B. Buxton, Captain J. F. Macdonald, Sir John Moore, Captain S. J. Motton and Colonel W. S. Mulvey, apologising for their inability to attend the meeting.

(2) From the Editorial Representative, N.V.M.A., transmitting a ruling of the Council, confirming that the Editorial Committee, while continuing to welcome, for publication in the Association's journal, the receipt of papers presented to Divisional meetings, were not committed to such publication, these papers being subject to the usual procedure of scrutiny by one or more referees.

The President thought they must accept the letter from the N.V.M.A. just as it was. It was for the Society to see that the quality of the papers was such as to ensure their publication. (Hear, hear.)

Elections to Fellowship.—There being no nominations, the meeting proceeded unanimously to elect into Fellowship Mr. W. J. Barclay Watson, of The Close, Thornbury, near Bristol, he having been proposed by Sir Frederick Hobday and seconded by Captain T. L. Wright.

Misleading Use of Letters.—Presentation of morbid specimens and cases of interest having been invited from the Table, without response, the President said that they must now pass to the next item on the agenda paper, which was as follows: "To discuss what measures, if any, can be taken to check or prohibit the practice adopted by certain unqualified persons of using letters, after their names, which might lead the public to believe that they are qualified to practise veterinary medicine or surgery."

The meeting resolved itself into committee for the consideration of this matter. Open meeting having been resumed after a prolonged session in committee, it was resolved: "That the representatives of the Society on the Council of the N.V.M.A. be empowered, at the Edinburgh meeting of Council, to give notice that at the October meeting of Council they will move that this subject be discussed, and that the Society's representatives shall then give their views as formulated at this meeting."

Paper.—The President now called upon Dr. Innes to deliver his paper: "The Pathogenesis of Tuberculosis in Domestic Animals according to the Nieberle School." Dr. Innes responded in a discourse which was heard with great interest, this being enhanced by an admirably selected series of macroscopical and microscopical photographs of tuberculous lesions both in the human subject and in the domestic animal, these being projected by the epidiascope. [Dr. Innes' paper, and a report of the discussion which followed its presentation, and of the essayist's reply, are reproduced at the commencement of this issue of the *Veterinary Record.—Editor.*]

A highly successful meeting concluded with the passing of a hearty vote of thanks to Dr. Innes and the payment of a similar tribute to the President for his conduct of the proceedings.

H. E. Bywater, *Hon. Secretary.*

HIGHLAND AND AGRICULTURAL SOCIETY

At a meeting of directors of the above Society held recently, the Earl of Howe, K.T., Treasurer, moved approval of the following Special Grants which were recommended by the Board of Directors: (1) £500 towards the Building Extension Fund of the Royal (Dick) Veterinary College; (2) £200, for the current year, to the Animal Diseases Research Association; (3) £100 for the current year to the Glasgow Veterinary College. Mr. James R. Lumsden, of Arden, seconded, and the grants were approved.

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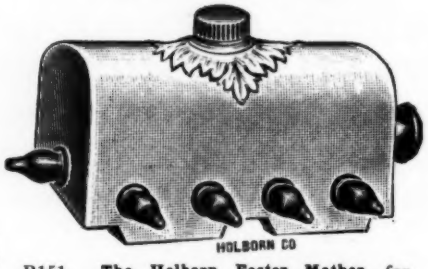

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Principal: O. CHARNOCK BRADLEY, M.D., D.SC., F.R.C.V.S.

115th Session Commences October

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College Calendar, with full particulars of Examinations, Bursaries, etc., may be obtained from A. C. Doull, C.A., Secretary.

The Australian Veterinary Association

Proposed Coat-of-Arms

The decision of the Australian Veterinary Association to adopt a coat-of-arms will be noted with interest by all members of the profession and we reproduce below both an illustration of the proposed heraldic emblem and the description thereof published in the December, 1936, number of the *Australian Veterinary Journal*. The photograph, while in black and white, shows the correct heraldic shading, and preparations are being made for the reproduction of the coat-of-arms on the official stationery of the Australian Veterinary Association and on the title page of the Association's journal.

Following is the report of the Heraldry Sub-committee of the Australian Veterinary Association:—

The description of the coat-of-arms decided upon by the Sub-committee and approved by the Council is, according to the Rules of Blazon: Parted per inverted pairle, gules. Dexter chief or, a poppy gules and vert. Sinister chief azure, five mullets as a "Southern Cross" argent. Base proper argent, a balançe; and a sword fessewise, pommelled and hilted, all sable.

Crest.—A centaur forcene or, and holding in the sinister hand a rough knotty staff entwined by a serpent.

Supporters.—Dexter a ram, sinister a bull, both or.

The design and its import may be explained:

Parted per inverted pairle, gules.—The shield is divided by an inverted Y-shaped band of a deep red or maroon (gules). The pairle is not a commonly used ordinary (division), but (says the Sub-committee) it is employed in Scotch heraldry, and our sister Association in South Africa has revived its use in their recently acquired arms, and in our opinion its use is particularly effective in our design. The colour of the ordinary is deep red or maroon, the colour commonly associated with veterinary associations, Army veterinary corps, etc.

Dexter chief or, a poppy gules and vert.—In the top right-hand segment an opium poppy (*Papaver somniferum*) is depicted against a gold background. The right and left of a shield are the right and left of the bearer. The poppy indicates our therapeutic ability and, in addition, our power to relieve pain. The usual charge employed to represent therapeutics is the aloe, but, on the suggestion of Brooke (*Vet. Rec.*, 1932), we have adopted the former as more suitable.

Sinister chief, azure, five mullets as a "Southern Cross" argent.—In the top left-hand segment five stars (mullets) are arranged as a "Southern Cross" on a blue (azure) background. The term *mullet* is from the French *molett*, the rowel of a spur. Strictly speaking, Australia's geographical position does not give her a sole right to the Southern Cross, but ever since its

use on the Federal Ensign it has been regarded as indicating Australia Felix, and to us a fitting device on the arms of a body who hope to carry on in this great southern continent the traditions of our predecessors in the Mother Land.

Base proper argent, a balance; and a sword fessewise, pommelled and hilted, all sable.—In the lower segment a balance, and a sword, the latter being in a horizontal position (*i.e.*, fessewise), both being depicted against a silver background. In heraldry the balance is always taken to be in "equipoise" unless otherwise stated. The sword also has to be fully described (*viz.*, pommelled=provided with a ball or ornament at the top of the handle; and hilted=provided with a crosspiece or guard and handle). This charge, "The Sword and Scales of Justice," represents our ability to control and eradicate disease by legislation.

The crest was the ornament worn on top of the helmet, in this case a centaur forcene or. Forcene or salient=rearing, or jumping with the forelegs in the air and the hind legs on the ground. The former term is restricted to descriptions of horses. The centaurs were a people of Thessaly, half men and half horse. The fable of the existence of these monsters is supposed to have arisen from the fact that the people of Thessaly tamed and rode horses, and when mounted appeared to the other non-equestrian Greeks as a single creature. Their name originates from the Greek *kentauros*, a bull goader or killer, probably from the fact that they hunted or herded bulls on horse back. The chief of the centaurs was Chiron, who was famous for his knowledge of medicine and shooting and taught mankind the use of plants and medicinal herbs. He is here depicted "*holding in his sinister* (*i.e., left*) *hand a rough knotty staff entwined by a serpent.*" This is the staff or wand of Æsculapius, the Greek God of Medicine. Æsculapius was the son of Apollo and Coronis. The Sun God, discovering the infidelity of his paramour, destroyed her in a fit of anger, but saved the infant (Æsculapius) in her womb and gave him to Chiron to be educated. His preceptor instructed him in the art of healing, and he eventually became so skilful that Jupiter struck him down with a thunderbolt, because Pluto (the God of the Underworld) complained that Hades was becoming depopulated. After his death he received divine honours.

From early times the serpent has been considered a symbol of natural healing, since it periodically renews itself by sloughing off its old skin. In medical and veterinary heraldry the wand of Æsculapius has frequently been confused with the caduceus of Hermes. The caduceus is a smooth staff entwined by two serpents in the form of a figure of eight, the heads facing inwards. Sometimes a winged morion (steel cap worn by common foot soldiers), called a petasus, is placed on the top. The origin of the confusion of these two emblems has been reviewed by S. L. Tyson (*The Scientific Monthly*, June, 1932). The first mistake was made by William Butts, physician to Henry VIII of England, who, in ignorance, adopted as an insignia of office an original design resembling the caduceus, used on the title page of the work of Johann Froben (a Swiss medical printer, who died in 1527).

The shaded bar beneath the crest is the *torse*. Originally this was a wreath of twisted metal and silk used to hide the ugly join between the crest and helmet. In modern heraldry the torse is usually depicted as a straight bar with three bands of metal and three of colour, and the helmet is frequently omitted. In our case the torse is silver and maroon.

Supporters.—These are a comparatively recent introduction into heraldry, and are usually figures of men and animals, whose function is to hold up or support the shield bearing the arms. In our proposed arms the supporters are on the right a ram and on the left a bull; both represent the livestock industry, upon whose support our profession rests. The supporters stand on a field which may be represented by a floral scroll.

The import of the proposed arms may be briefly described thus: The Southern Cross indicates that we are an Australian Association; the poppy our therapeutic ability and power to alleviate suffering; and the Sword and Scales of Justice the control of disease by legislation. Chiron (the first healer) represents our art in general, while the supporters signify animal husbandry, the basis and support of our craft.

In Parliament

The following questions and answers have been recorded in the House of Commons recently:—

Horses (Grass Sickness)

Mr. Henderson Stewart asked the Secretary of State for Scotland whether he is aware of the new outbreaks of grass sickness among horses in different parts of Scotland; and whether he can make any statement on the steps now being taken to abate the scourge?

Mr. Wedderburn: My right hon. Friend is aware that grass sickness, which is a seasonal disease, is again becoming prevalent in certain parts of Scotland. The disease has been the subject of intensive research over a long period by the Animal Diseases Research Association, Edinburgh, and in view of its economic importance the Government, during the current financial year, have made a grant to the Association of £9,800 for the extension of their premises, and a further grant of £3,200 for an intensification of their research into the subject. This large-scale investigation now in progress is not sufficiently advanced for results to be known.

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Horses (Docking)

Mr. Perkins asked the Minister of Agriculture whether he will consider introducing legislation designed to prevent the docking of horses, in view of the pain inflicted on the animal during the operation and of the fact that a docked horse has no protection against flies?

The Minister of Agriculture (Mr. W. S. Morrison): The operation of docking is scheduled under the Animals (Anaesthetics) Act, 1919, which requires that the animal, during the whole of the operation, shall be under the influence of a general or a local anaesthetic being, in either case, of sufficient power to prevent it feeling pain. I do not regard a general prohibition of docking as practicable.

Mr. Perkins: Is the Minister aware that in the agricultural area which lies between Cirencester and Tewkesbury this operation is carried out regularly without an anaesthetic?

Mr. Morrison: I understand that the operation of docking is, in all circumstances, accompanied by a suitable anaesthetic. With regard to the question put by my hon. Friend the Member for Stroud (Mr. Perkins), if he can give me

some information in support of his general statement, I shall be obliged to him.

Mr. H. Morrison: Is there any definite advantage in having these animals docked?

Mr. Morrison: Yes, Sir. I am told that frequently it is unsafe to use an undocked horse as a draught horse. It may involve a driver in serious risks.

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In the course of the debate on the vote for the Ministry of Health Captain Elliston drew attention to the fact that large quantities of boned beef have been brought into this country in unrecognisable cuts with lesions that might indicate disease removed. He had been assured that the system of inspection at the port of origin was absolutely reliable and that he might rest content, but he had in his hand an extract from a report by Mr. Ross Grant, the Australian Veterinary Officer, in the course of which he spoke of the difficulties of the meat industry in Australia. Mr. Ross Grant favoured the granting of an export bonus of at least ½d. per pound, but added:—

"If such a bounty is granted, it must be on meat that is the product of the legitimate beef industry, and not on low grade boneless beef, the product of worn-out dairy cows, or on boneless veal derived from immature calves."

That seems to be an admission that the boned beef, which we are told is so reliably inspected, enjoys no respect in Australia, the source of supply. It is a serious matter, because nearly 2,000 tons of that beef comes to England each month, more than half of it from Australia. There we have an admission from an Australian source that that sort of stuff is not worthy of being included among the meat to receive a subsidy. Yet this boned beef can enter this country under the terms of the Public Health (Imported Food) Regulations which come into force on January 1st, 1938. May we hope that it is not yet too late for the amendment of those Regulations?

No reply to this statement was made by the Minister of Health in his closing speech.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

June 28th.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 4 p.m.

July 1st.—Meeting of the Dumfries and Galloway Division, N.V.M.A., at Thornhill, commencing at 12 noon.

July 5th.—R.C.V.S. Written Examinations.

July 6th.—R.C.V.S. Written Examinations.

July 8th.—R.C.V.S. Oral Examination begins.

July 23rd.—Summer Meeting of the Royal Counties V.M.A., Division, N.V.M.A., at Abingdon, Berks., at 2.30 p.m.

July 26th-30th.—N.V.M.A. Congress at Bournemouth.

THE NEW PRESIDENT OF THE R.C.V.S.

As was foreshadowed by his election as Vice-President last year, Lieut.-Colonel P. J. Simpson, D.S.O., T.D., J.P., F.R.C.V.S., has been unanimously elected President of the Royal College for the year 1937-38. As we shall in an early issue refer at greater length to Colonel Simpson's career, we limit our remarks this week to expressing to him our congratulations on attaining this high honour. Colonel Simpson has been a member of the Council of the College for 16 years, and is the third member of his family to reach the President's Chair. It is interesting to note that his uncle, Sir Henry Simpson, served on the Council for ten years (1882-92) and his father Mr. J. F. Simpson for 24 years (1888-1912)—making a total for the three members of the family of 50 years' service. His uncle was President and his father Vice-President of the College, in 1887, 50 years ago, the Jubilee Year of Queen Victoria, and it is, therefore, a most appropriate coincidence that the son and nephew should be elected President in a Coronation Year 50 years afterwards. The only other instances of father and son achieving the Presidency are the two Fields (1854 and 1867), the two Professor Williams (1879 and 1902) and the two Lockes (1909 and 1934).

That Colonel Simpson will worthily uphold the family tradition is certain; we wish him health and happiness during his year of office.

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PERSONAL

PRESENTATION AT THE KING'S LEVEE

At the Levée held by His Majesty the King at St. James's Palace, on Tuesday, June 22nd, Mr. John Willett, M.R.C.V.S., was presented on his appointment as Honorary Veterinary Surgeon to His Majesty the King. Among the other presentations made were Lieut. John Hickman, R.A.V.C., and Captain Alexander Ralston, R.A.V.C.

Mr. John Willett also attended the Garden Party held at Buckingham Palace on the afternoon of the same day.

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Retirement from Giza of Mr. H. E. Cross

The announcement is made of the retirement from the Directorship of the School of Veterinary Medicine, Giza, a branch of the University of Egypt, of Mr. Henry Eustace Cross, A.Sc., M.R.C.V.S., D.V.H., Captain late R.A.V.C.

The *Egyptian Gazette*, in the course of a notable tribute to Mr. Cross's work at Giza, first makes reference to the loss sustained by the Egyptian Turf by the departure for England of Mr. and Mrs. Cross, the latter being well known as the owner of thoroughbreds, while Mr. Cross is referred to as "a walking encyclopaedia in respect of racehorses and their breeding." The *Gazette* continues: "Educated at Durham University, Mr. Cross afterwards continued his studies in Germany, Switzerland, the Pasteur Institute and Alfort Veterinary School, but he actually graduated as a veterinary surgeon from the Edinburgh University, after a brilliant career as a student. It was only natural that his outstanding abilities should have

opened up an entry into wider spheres of usefulness.

"His first flight into other fields was a prolonged visit to Australasia, and he was eventually delegated to investigate, under the auspices of the Liverpool School of Tropical Medicine, the cattle diseases then ravaging the great herds of cattle in South America. These investigations were undertaken on account of the various English companies, whose yast interests centred in the cattle of that country made it imperative for some solution to be found to eradicate the infection then so prevalent, and it was as a result of the researches made during this visit that disease was to a great extent extirpated and the companies concerned enabled to carry on with success.

"The reputation gained by this success, brought Mr. Cross an offer from the Indian Veterinary Service to take up the post of First Assistant Bacteriologist to the Imperial Bacteriologist, and this he accepted and filled for a number of years. He was then delegated to take charge of the Government Laboratory in the Punjab, working principally on surra on blood-sucking flies, and his investigations in connection with these pests resulted in the evolving of what is known as the tartar emetic treatment for surra, which saved the Indian Government many thousands of pounds.

"Then came the outbreak of war, and during that period Mr. Cross saw active service with the rank of Captain in India and Palestine. Retiring from the Indian Government service in 1923, he settled down to a less arduous life on his farm in Hertfordshire, where most of his time was spent racing, greyhound coursing and breeding. He was one of the first to race greyhounds at Clapton Stadium and Wembley, where he gained noted successes. Being so well known in the veterinary profession, however, Mr. Cross was not allowed to live his retired life very long, for he was invited to come out to Egypt for the purpose of reorganising the Giza Veterinary School. Always a willing worker, he once more settled down into harness in 1929, and during his seven years' sojourn in the land of the Pharaohs, has worked extremely hard and with eminent success.

"To those aware of the chaos existing at the Giza Veterinary School on the arrival of its new Director, little need be said, as the difference found to-day speaks for itself. During the comparatively short period of his office, Mr. Cross has earned for this institution a reputation of which any European establishment of its kind might well be proud. Fully equipped with an extensive library, museum, lecture halls, cinematograph, dissecting rooms, laboratories, and everything necessary for the training of students, not only is the Giza School up-to-date as a Veterinary Hospital, but also as a model training centre for the many young Egyptians now studying for the profession.

"Mr. Cross has certainly made good use of his time in Egypt, and in so freely passing on his wide knowledge to the younger generation of Egyptians, his influence will remain though he may not be here in person. After such a busy life, he has well earned the leisure it is hoped he will enjoy for many years to come, while their many friends will look forward to seeing both Mr. and Mrs. Cross when the winter comes round. During his stay in England, Mr. Cross will interest himself principally with his breeding establishment, in which are to be found at the present time some promising yearlings and foals by 'King's Oven,' 'Reveillon,' etc."

Retirement from Nigeria of Dr. G. N. Hall

Dr. G. N. Hall, Veterinary Pathologist, Nigeria, who retires from the Colonial Service in October next, first took up his work in the Colonies when in 1912 he was appointed to work as Research Officer at Onderstepoort, under Sir Arnold Theiler. In 1913 he was offered and accepted a post in Kenya Colony. In 1922 he was appointed Assistant Veterinary Pathologist, Tanganyika Territory; in 1926, Veterinary Pathologist, Uganda, and in 1929 he took up his present position in Nigeria. Dr. Hall has recently been to Gambia to help inaugurate a scheme for rinderpest immunisation and control, and on his retirement will return there for a further six months, at the request of the Gambian Government, in order to assist in the carrying out and completion of that scheme.

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Will.—William Maxwell Ferguson, veterinary surgeon, 36, Argyle Street, Dundee, £9,744.

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R.C.V.S. OBITUARY

Gray, Charles Elias, St. Helier, Jersey. Graduated Edinburgh, May 28th, 1890. Died June 14th, 1937; aged 73 years.

Elias, D. John, Pentraeth, Anglesey. Graduated N. Edinburgh, July 16th, 1896. Died June 15th, 1937.

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The Late Mr. Charles E. Gray, M.R.C.V.S.

The late Mr. Charles E. Gray, M.R.C.V.S., who died in Jersey the other day at the age of 73, was buried in the churchyard of St. Saviour, where rest the remains of his wife, whom he lost a few years after his arrival in the island.

Mr. Gray, who had resided in the island for many years, was known throughout the length and breadth of South Africa, where his innumerable friends, Boer and British alike, will learn of his death with the deepest sorrow. His great work in fighting rinderpest and other cattle diseases has evoked many enthusiastic tributes from the Government authorities in the Cape, in the Transvaal, and in Rhodesia. His work with the Chartered Company, then with the Transvaal Government, and later with the Union Government, brought him into close touch with hosts of people whose regard and friendship he never lost. Perhaps no living man knew South Africa as well as he did, his continual treks to combat and check the spread of cattle diseases carrying him to all parts of that great country.

He collaborated with Professor Koch in investigating rinderpest and in the discovery of the new method of dealing with that disease.

The son of the Controller of Telegraphs of the G.P.O., Edinburgh, Mr. Gray, in 1879, entered the telegraph service, in which he stayed seven years. Later he entered the Royal Veterinary College, Edinburgh, and qualified "with exceptional brilliancy," and after practising his calling for a time in England and in the United States, found his way to South Africa in 1895. Finding no suitable opening in a veterinary capacity, he joined the Rhodesian Telegraph Service, but a year later the rinderpest invasion gave him his opportunity. He was invited by the Chartered Company to investigate the outbreak, and the work of its eradication was carried out on the lines of his recommendations.

The Matabele War interrupted this work, and Mr. Gray served during the campaign. On its conclusion he was again employed by the Chartered Company.

In 1897 he was lent to the Native Affairs Department of the Cape Colony to deal with rinderpest.

In 1905 he was appointed Principal Veterinary Officer for the Transvaal, which post he held until the Union, when he was appointed Principal Veterinary Surgeon for the Union Government of South Africa. He retired from that post in March, 1921.

Mr. Gray was a prominent member of the Scottish Society of Jersey, and his genial spirit and unfailing courtesy will be greatly missed by the committee, of which he was a member, and by the members of the Society at large. He was also an ardent member of the Société Jersiaise.

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Mr. D. J. Elias, whose death is reported above, was a county magistrate and an ex-member of the Anglesey County Council. He had been Chairman of the Standing Joint Committee and was an Alderman of the Council when he resigned three years ago to take up the post of inspector for the county under the Diseases of Animals Acts. He leaves a widow, one son, and five daughters.

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GENERAL OBITUARY

Sir Squire Sprigge

Medical journalism has suffered the loss of an outstanding figure in the death, which took place on June 17th, of Sir Squire Sprigge, who had been for a long period the editor of the *Lancet*.

Sir Squire Sprigge modestly attributed his success as a medical journalist to the friendship of Surgeon-General Jeffrey Marston, Dr. Sydney Coupland, Dr. J. G. Glover, and Dr. Thomas Wakley, his immediate chief. The last named, and his father, Mr. T. H. Wakley, F.R.C.S., respectively grandson and son of the founder of the *Lancet*, commissioned him soon after he joined the staff of that periodical as assistant editor, to write in its columns a history of the founder and the early work of the paper. The chapters were published in a book in 1896. Thus he became familiar with the traditions of the paper over a period of some 50 years. When it was seen some 30 years ago that the relations of medicine to the public and the position of medical education required definition, in view of the certainty of legislative changes and internal reform, two series of anonymous articles appeared in the *Lancet*, which were later published in book form in 1905. Though few definite recommendations were ventured upon such contributions to-day would be made by groups of specially informed persons—a fact which epitomises the chief reform in the *Lancet* of recent days—namely, the substitution of expert views for editorial or anonymous pronouncements.

In 1907 the senior, and for some time largely nominal, editor, Mr. T. H. Wakley, died, and Dr. T. Wakley became editor, associating Sprigge informally with himself. A year later he died, and Sprigge was promoted to the sole editorship, but with the collaboration for two years of a fine scholar in Dr. H. P. Cholmeley. In 1911 he secured as assistant editor Dr. Gerald Horner, now editor of the *British Medical Journal*.

After the War the paper passed into the hands of Messrs. Hodder and Stoughton, who always supported the extension of activities. In 1921 Sprigge was elected F.R.C.S. Eng., and in the same year was knighted. In 1928 he delivered the annual Hunterian lecture to the American College of Surgeons and was elected F.A.C.S. At the instance of the proprietors he visited a group of the best-known American and Canadian universities and published a report on their medical curricula with a view to making co-operation between the countries easier. A report of these visits was published as a special supplement and constituted, save the Hunterian lecture and address, his only signed contribution to the *Lancet*.

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Miss Louisa Hunting

We regret to announce the death, at the age of 67, of Miss Louisa Hunting, only surviving daughter of the late William Hunting, F.R.C.V.S., founder of this journal. Miss Hunting's death took place at her home, 13, King's Court Mansions, Fulham Road, S.W.6, on Saturday morning last, after an illness of eighteen months' duration. For a time she was treated at a nursing home, but she had returned to her home some three months ago. The interment was at Putney Vale on Wednesday last, prior to which a memorial service was held at All Saints', Fulham. Miss Hunting was a prominent figure in veterinary circles during the lifetime of her father, for whom she acted as hostess, being a woman of a fine commanding presence. Since her father's death, however, she had lived in retirement, though still retaining a keen interest in the affairs of the profession. She is survived by one brother, Mr. F. C. Hunting, to whom our sincere sympathy is extended.

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COUNTY COUNCILS ASSOCIATION

At a recent meeting of the Executive Council of the County Councils Association, the report of the Agricultural Committee contained the statement that, in view of the appointment by the Minister of Agriculture and the Secretary of State for Scotland of a committee of enquiry into the finances of veterinary education, postponement has been made of the issue to the county councils of the proposed communication on the subject of annual contributions to veterinary colleges, pending publication and consideration of the Veterinary Education Committee's report.

In the matter of poultry disease, the Agricultural Committee expressed agreement with the view of the Royal Agricultural Society that local authorities should be empowered to prevent the exposure for sale at public markets and sales of fowls in an obvious state of ill-health, and that representations be made to the Ministry of Agriculture and Fisheries accordingly.

The County Councils Association, in adopting the report of the Agricultural Committee, also endorsed the finding of the committee that it could not usefully take any action on the issue raised by the Herefordshire diseases of Animals Sub-Committee in correspondence concerning the following decision of the Minister of Health (referred to in the *Veterinary Record* of May 8th):—

"That it is irregular for an authority to approve, for the purpose of carrying out tests under the Order, only their whole-time veterinary staff, and that, while such officers can properly be nominated for this purpose, an

applicant for a licence cannot be deprived of his right to submit the name of another veterinary surgeon for approval. If an applicant adopts this course, it is incumbent on the authority to consider in a judicial manner the merits of the person whose name is submitted."

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INTERNATIONAL CONGRESS OF AGRICULTURE

When the seventeenth International Congress of Agriculture was opened at the Hague on June 17th, Dr. Colijn, the Prime Minister, said that the collapse of the international goods market was the consequence of extraordinary agrarian protectionism. The way back was now most difficult. Limited protection, which led neither to artificial production nor to over-production, was acceptable. The time was now favourable for a return from excessive to normal protection now that the world's prices had recovered; and a return to pre-War conditions must be regarded as the final aim.

About 900 delegates, representing 40 countries, attended the Congress. Soviet Russia was not represented, but there were two delegations from Spain, one from each side in the civil war.

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LEGAL NOTES

Dog Left Unattended after Road Accident.—Miss Ellen Sylk, surgeon, of Harley Street, W., was before the Burnham (Bucks) Magistrates recently on two summonses alleging that she had caused unnecessary suffering to a dog and failed to report an accident.

Mr. John Findlayson, a veterinary surgeon, of Slough, said he examined a terrier dog which had been injured in an accident at Dorney, near Windsor. It was suffering from severe injuries to the back and abdomen and was paralysed in the hind legs. The dog died the same day.

Miss Sylk said she was driving with an invalid patient beside her when the dog ran out into the road in front of the car and gave her no chance to avoid it. When she saw that the dog had been struck she stopped and asked a woman who was walking away if the animal belonged to her. The woman replied: "It is a miserable little dog. Let's throw it into the water." Afterwards the woman promised to get help from some cottages near by. Miss Sylk added that she did not examine the dog, and as she thought it would be cared for she drove off.

She was fined 10s. on each summons and was ordered to pay £2 12s. 6d. costs.

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Crook Farmer Fined for not Reporting Suspected Anthrax.—A recent outbreak of anthrax on Stanley Old Farm, Crook, had a sequel at Bishop Auckland, on June 14th, when the tenant, John Beveridge, was fined £5 and costs for failing to report a suspected outbreak of the disease. He pleaded "Not guilty."

Superintendent Headen said that the outbreak lasted for some little time and several cows died. On May 12th, after inquiries had been made, it was ascertained that a cow had been stuck by Beveridge. He did not report the matter but sent to Crook for a butcher to dress the carcase. A butcher who went to the farm told him that the flesh was not fit for human consumption.

Afterwards several other cows died. On May 17th Beveridge consulted a veterinary surgeon about a cow that was ill. The next morning the cow died and Beveridge told the surgeon on the telephone.

Joseph Robinson, butcher, of Wheatbottom, Crook, said that while dressing the carcase he cut his hand but did not feel any ill-effects. He did not know that anthrax was suspected.

Thomas Johnson, district veterinary officer for Durham County, said that examination of some offal revealed anthrax. He questioned Beveridge about the cow he stuck and Beveridge said that it was dying. It had had an accident and had to be helped into the byre.

Mr. A. Forbes, veterinary surgeon, of Bishop Auckland, said that he visited the sick cows and informed the police of suspected anthrax.

For Beveridge, Mr. E. H. R. Freeman submitted that the case had gone far enough. Beveridge had lost between £150 and £175 through the loss of his cows. He had not seen anthrax before and he had no idea that there was such a thing on the farm.

Beveridge said that the first cow injured its back so severely that he thought it was going to die. He therefore stuck it and sent for a butcher to dress the carcase.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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HOBDAY RESEARCH ENDOWMENT FUND

To the Editor of the Veterinary Record

Sir,—An appeal has been launched for funds for the purpose of making a presentation to Sir Frederick Hobday on his retirement from the position of Principal and Dean of the Royal Veterinary College, as a mark of appreciation of his services to veterinary science in general and the Royal Veterinary College in particular.

Sir Frederick has intimated his wish to devote the sum raised to the furtherance of the collaboration between the medical and veterinary branches of medicine in their mutual crusade against the diseases of animals which are common to, or communicable between, animals and man.

Since the preliminary letters were issued the method of carrying this out has been considered by Sir Frederick and he has intimated his desire to found a Research Scholarship Fund in order to encourage research by veterinary and medical men in connection with the diseases of animals and man, which research it is hoped will further the liaison between the two professions and be of great benefit to the science of medicine in its widest sense; the fund to be called the Hobday Research Endowment Fund.

The committee feel that these details, and particularly the idea itself, will be of the greatest interest to members of the veterinary and medical professions. It is hoped that amongst his numerous friends and well-wishers a substantial sum will be raised which will be sufficient to enable this scheme to be carried out adequately.

Yours faithfully,

E. T. Cox,

Hon. Secretary.

St. Ermins,
Westminster, S.W.1.

June 19th, 1937.